THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

No. IV. OF VOL. I., 1916.
No. 4821. Vol. CXC. LONDON, SATURDAY, JANUARY 22, 1916. Price 6d.

J. & A. CHURCHILL'S NEW BOOKS.

72nd Annual Issue. 2119 pages. 15s. net (postage 8d.).
THE MEDICAL DIRECTORY, 1916.

2 Volumes. With 504 Original Illustrations. 25s. net.
A TEXT-BOOK OF SURGERY.
By R. WARREN, M.D., F.R.C.S., Assistant Surgeon, London Hospital.

4 Coloured Plates and 13 Text-figures. 8s. 6d. net.
DIET AND DISEASE IN INFANCY.
By H. C. CAMERON, M.D., F.R.C.P., Assistant Physician, Guy's Hospital.

Volume 42. 8s. 6d. net.
ST. THOMAS'S HOSPITAL REPORTS.
Edited by Dr. J. J. PERKINS and Mr. C. A. BALLANCE.

Vol. 35. With 19 Plates and 48 Text-figures. 12s. 6d. net.
THE TRANSACTIONS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.
SESSION 1915. With Lists of Officers, Members, &c.

With 72 Text-figures, 2 Plates. 10s. 6d. net.
THE PRIMARY LUNG FOCUS OF TUBERCULOSIS IN CHILDREN.
By Dr. ANTHON GHON. English Translation by D. BARTY KING, M.D.

Fourth Edition. 354 Illustrations. 16s. net.
EDEN'S MANUAL OF MIDWIFERY.
London: 7, Great Marlborough-street.

By FREDERICK J. McCANN, M.D.Edin., F.R.C.S.Eng., Surgeon, Samaritan Free Hospital for Women, London, N.W.

CANCER OF THE WOMB: ITS SYMPTOMS, DIAGNOSIS, PROGNOSIS, AND TREATMENT. Fully illustrated. 20s. net.

LIVERPOOL MEDICO-CHIRURGICAL JOURNAL.—"Cancer of the Womb, by F. J. McCann, is a book that can be recommended alike to the general practitioner and the specialist. Written in a fluent manner, it embodies the ripe experience of a renowned operator, trained observer, and patient investigator."

EDINBURGH MEDICAL JOURNAL.—"The book is one of very great merit; it will be read with interest both by the specialist and general practitioner as an authoritative exposition of the important subject with which it deals."

PRACTITIONER.—"Dr. McCann has produced a valuable work which deserves to be widely known."

ST. BARTHOLOMEW'S HOSPITAL JOURNAL.—"The plates are excellent. This is a book we can thoroughly recommend."
London: Henry Frowde and Hodder & Stoughton.

A STANDARD WORK OF REFERENCE FOR THE PRESCRIBER.

Price 10s. 6d. net; post free (inland) 10s. 10d.

SQUIRE'S POCKET COMPANION

to the new BRITISH PHARMACOPŒIA, 1914.

See Page 26.

Royal 8vo. 252 pages. 113 Illus., 23 in Colours. Cloth. Price 18s. net.
CYSTOSCOPY AND URETHROSCOPY FOR GENERAL PRACTITIONERS. By BRANSFORD LEWIS, M.D., F.A.C.S., and ERNEST G. MARK, M.D., F.A.C.S.
Henry Kimpton, 263, High Holborn, London, W.C.

Crown 4to. 400 pages. 215 Illustrations. Cloth. Price 21s. net.
BRAUN'S LOCAL ANESTHESIA: ITS SCIENTIFIC BASIS AND PRACTICAL USE.
Henry Kimpton, 263, High Holborn, London, W.C.

BY P. LOCKHART MUMMERY, F.R.C.S.

DISEASES OF THE COLON AND THEIR SURGICAL TREATMENT.

Numerous Illustrations and Coloured Plates. 10s. net.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

BY ERNEST CLARKE, M.D., F.R.C.S.,
Consulting Surgeon to Central London Ophthalmic Hospital, &c.
ERRORS OF ACCOMMODATION AND REFRACTION OF THE EYE.
Third Edition. With 86 Illustrations and Coloured Plates. Price 5s. net.
"..... This book is one of the best."—PRACTITIONER.
London: Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden, W.C.

LEWIS'S CIRCULATING LIBRARY.

READING ROOM FOR SUBSCRIBERS OPEN DAILY.

Annual Subscription, Town or Country, from One Guinea.

BOOKS MAY BE RETAINED AS LONG AS REQUIRED OR EXCHANGED DAILY.

HOURS OF BUSINESS—9 A.M. to 6.30 P.M.

SATURDAYS CLOSED AT 1 P.M.

H. K. Lewis & Co. Ltd., Medical Publishers and Booksellers,
136 Gower Street and 24 Gower Place, London, W.C.

NOW READY. Price 1s. 6d. net; post free 1s. 8d.
HÆMATURIA, A SYMPTOM: Its CAUSES and DIAGNOSIS. By DAVID NEWMAN, M.D., &c., Consulting Surgeon to the Royal Infirmary, Glasgow.
Glasgow: Alex. Stenhouse, 40 & 42, University Avenue.
London: Henry Kimpton, 263, High Holborn, W.C.

THE PRACTITIONER'S LIBRARY.

SOME USEFUL BOOKS

FROM SAUNDERS' LIST.

See Advertising Page 5.

NEARLY READY. With 150 Illustrations.
By CHARLES J. HEATH, F.R.C.S. Eng.,
Late Surgeon to the Hospital for Diseases of the Throat, Golden-square, London.
AURAL SUPPURATION: ITS ARREST, WITH PRESERVATION OF THE HEARING.
The Indications for performance of the Author's conservative mastoid operation.
London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

TWO PRACTICAL GUIDES TO RATIONAL PSYCHOTHERAPY.
By EDWIN L. ASH, M.D. LOND.
HOW TO TREAT BY SUGGESTION.
Giving directions for various methods, with cases. 1s. net.

MENTAL SELF-HELP. Second Edition. 2s. 6d. net.
LANCET.—"Much of the advice herein contained is excellent."
London: Mills & Boon, Ltd., 49, Rupert-street, W.

BY C. MANSELL MOULLIN, M.D.Oxon.,
F.R.C.S., Consulting Surgeon to the London Hospital.
Fourth Edition.
ENLARGEMENT OF THE PROSTATE. Price 6s.
London: H. K. Lewis & Co., Ltd., 136, Gower-street.
WHEN to OPERATE in INFLAMMATION of the APPENDIX.
Third Edition now ready. Price 2s. 6d.
London: J. Bale & Danielsson, Ltd., 83-89, Gt. Titchfield-street.

DISEASES OF THE STOMACH.
By W. SOLTAU FENWICK, M.D.
CANCER AND TUMOURS. Royal 8vo. 10s. 6d.
ULCER AND ITS CONSEQUENCES. Royal 8vo. 10s. 6d.
London: J. & A. Churchill, 7, Great Marlborough-street, W.

BRONCHIAL ASTHMA: ITS PATHOLOGY AND TREATMENT.
By J. B. BERKART, M.D., Late Physician to the City of London Hospital.
Third Edition. Revised. 8vo. 5s. net.
"The work is a splendid summary of the present-day knowledge of the disease."—WEST LONDON MEDICAL JOURNAL.
By the Same Author.
NERVOUS ASTHMA: ITS PATHOLOGY AND TREATMENT.
8vo. 2s. 6d. net.
Of all Booksellers.
London: Humphrey Milford, Oxford University Press, Amen Corner, E.C.

CONGRESS FEB 2 1916 MEDICAL LIBRARY

"LESLIES' ZINCOPLAST"

A MUCH IMPROVED MAKE OF ZINC OXIDE PLASTER. STRONGLY SELF-ADHESIVE; NON-IRRITATING; DOES NOT DRY UP.

May be obtained on White or Pink Tinted Cloth, 5 yd. or 10 yd. spools, in all the usual widths.

Medical Officers and Pharmacists are invited to write for Trial Samples.

LESLIES' Original Brown Holland Surgical Strapping (DOES NOT SLIP).

In General Hospital Use since 1875. Has a World-wide Reputation.

LESLIES, Ltd., 18, Eldon Street, London, E.C.

BULLOCK'S PEPSINA PORCI.

DOSE—2 to 4 GRAINS.

ACID GLYCERINE OF PEPSINE

DOSE 1 to 2 DRMS. **(BULLOCK)**

In this preparation advantage has been taken of the solubility of Pepsine in Glycerine to produce a convenient and desirable *liquid form* of this valuable medicine; whilst the preservative qualities of the menstruum confer upon the Acid Glycerine of Pepsine the property of keeping for any length of time.

May be prescribed with most substances compatible with Acids.
In 4-oz., 8-oz., and 16-oz. Bottles, and in Bulk.

The published experiments of G. F. DOWDESWELL, Esq., M.A. Cantab., F.C.S., F.L.S., &c., Dr. PAVY, Professor TUSON, the late Professor GARROD, Dr. ARNOLD LEES, and others, conclusively demonstrate the excellence, high digestive power, and medicinal value of the above preparations.

J. L. BULLOCK & CO., 3, Hanover St., Hanover Sq., London, W.

VALENTINE'S PREPARATION
NUTRIO PRIME
MEAT JUICE.
The result of an original Process of Preparing Meat, and extracting its Juice, by which the elements of nutrition are obtained in a state, ready for immediate absorption.
DIRECTIONS—Dissolve one teaspoonful of the Preparation in two or three tablespoonfuls of cold or warm water. The use of boiling water changes the character of the preparation.

Valentine's Meat-Juice

In **Hospital** and **Private Practice** during **Epidemics** and **in their own persons** when ill, **Physicians** have demonstrated the **Value** of **Valentine's Meat-Juice** in **Sustaining** and **Strengthening** the weakened **Vital Forces.**

Pneumonia *and* Influenza.

Cavalier Dr. Enrico Ballerini, *Late Surgeon to the Hospital of Rome, Italy:* "I have used VALENTINE'S MEAT-JUICE in the treatment of patients and also personally after having been ill with Influenza, and I must say it is an excellent tonic in conditions of great organic weakness. I have prescribed it with the greatest satisfaction for convalescents and invalids restricted to a liquid diet."

Edward C. Seufert, M. D., *Professor Histology and Pathology, Illinois Medical College, Chicago:* "I have always been a user of the valuable preparation, VALENTINE'S MEAT-JUICE. The best results that I have obtained from it have been in Typhoid Fever and Broncho-Pneumonia of children. I believe that the samples sent helped to save the child of one of my students at the College."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,

D 175 **RICHMOND, VIRGINIA, U. S. A.**

THE LANCET.

No. 4821. LONDON, SATURDAY, JANUARY 22, 1916. Vol. CXC.

CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

INVESTIGATIONS on Clinical Thermometry: Continuous and Quasi-continuous Temperature Records in Man and Animals in Health and Disease. By G. SIMS WOODHEAD, M.A., M.D., LL.D., Professor of Pathology, Cambridge; and P. C. VARRIER-JONES, M.A., M.R.C.S., L.R.C.P. Lond., Foundation Scholar, St. John's College, Cambridge. (From the Pathological Department, University of Cambridge.) Part I. The Clinical Thermometer.—(*To be continued*) 173

ORIGINAL ARTICLES.

On the Bactericidal Power Acquired by the Serum after the Administration of Salvarsan or Neosalvarsan. By S. R. DOUGLAS, M.R.C.S., L.R.C.P. Lond., Captain, I.M.S. (retd.); First Assistant, Bacteriological Department, Medical Research Committee, National Insurance Act; and L. COLEBROOK, M.B., B.S. Lond., Captain, R.A.M.C. (T.). (From the Inoculation Department, St. Mary's Hospital, London.) 181

A Contribution to the Biology of the Vermiform Appendix. By W. COLIN MACKENZIE, M.D. Melb., F.R.S. Edin.—(*Illustrated*) 183

Notes on Friedländer's Pneumobacterium. By A. R. FRIEL, M.D. Dub., Honorary Physician for the Nose, Throat, and Ear General Hospital, Johannesburg 187

Stretchers for the Wounded in the Trenches. By G. H. COLT, F.R.C.S.Eng., Captain, R.A.M.C. (T.F.); Assistant Surgeon, Royal Infirmary, Aberdeen.—(*Illustrated*) 202

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A Case of General Tetanus Following Local Tetanic Spasms of Injured Limb. By THOMAS B. MOUAT, M.D. Edin., F.R.C.S.Eng., Captain, R.A.M.C. (T.), 3rd Northern General Hospital, Sheffield; Honorary Assistant Surgeon, Royal Infirmary, Sheffield 188

Gastrotomy in a Baby Aged 6 Months. By C. P. G. WAKELEY, M.R.C.S., L.R.C.P. Lond., House Surgeon, King's College Hospital; Surgeon, R.N.—(*Illustrated*) 189

MEDICAL SOCIETIES.

ROYAL SOCIETY OF MEDICINE: SECTION OF THERAPEUTICS AND PHARMACOLOGY: Discussion on "Soldier's Heart." 189

ROYAL ACADEMY OF MEDICINE IN IRELAND: The Electrocardiograph.—Cases connected with Liver and Biliary Passages 190

WEST LONDON MEDICO-CHIRURGICAL SOCIETY: Exhibition of Cases and Skiagrams 191

REVIEWS AND NOTICES OF BOOKS.

Veterinary Anæsthetics. By Fredk. Hobday, F.R.C.V.S., F.R.S.E. 191

Medicine and Meditation. Occasional Writings by Alex. Lewers, L.R.C.P. Lond., D.P.H. Lond. 192

Japan. By Pierre Loti. Translated from the French by Laura Ensor 192

Jerusalem. By Pierre Loti. Translated from the French by W. P. Baines 192

The Indian Journal of Medical Research. Vol. III 192

NEW INVENTIONS.

A New Metacarpal Splint.—(*Illustrated*) 194

LEADING ARTICLES.

THE SUPPLY OF MEDICAL OFFICERS FOR THE ARMY 195

THE MIDWIVES ACT FOR SCOTLAND 196

ANNOTATIONS.

The Health of Munition Workers 197

"Soldier's Heart." 197

Cases in which a Positive Wassermann Reaction was Obtained in Patients Later Affected with Syphilis 198

Tender Feet and Verruca Plantaris 198

Typhoid Coexisting with Diphtheria 199

The Treatment of Phthisis by Sun-baths 199

The Demand for Explosives and the Food and Drug Supply 200

Appendicitis with the Cæcum on the Left Side 200

"Louping Ill" 201

SPECIAL ARTICLES.

Royal Medical Benevolent Fund 193

National Health Insurance: O'Neill *v.* Middlesex Insurance Committee.—Standing Orders for Panel Committees.—The Return of Record Cards 194

Canada: Vital Statistics in Canada.—An Important Legal Decision.—The Universities, the Medical Council, and the Ontario Medical Commission.—Free Serums for Ontario 207

The Services: Royal Navy Medical Service.—Army Medical Service.—Royal Army Medical Corps.—Territorial Force 208

VITAL STATISTICS:

Health of English Towns 209

Health of Scotch Towns 209

Health of Irish Towns 210

CORRESPONDENCE.

Functional Nervous Disease (Dr. Robert Armstrong-Jones) 210

Shrapnel Wounds (Sir Desmond O'Callaghan) 211

A Case of Masked Malaria (Mr. Sam. L. Brohier) 211

Illumination in Operations (Mr. C. Hamilton Whiteford) 212

Loss of Speech and Shell-shock (Col. J. McLaughlin) 212

The Preparation of Catgut by Picric Acid and Oil of Cloves (Dr. J. D. Speid Sinclair) 212

Cancer and Heredity (Dr. James Rae) 212

THE WAR.

The Casualty List 215

The Honours List 215

Deaths among the Sons of Medical Men 215

The Medical Examination of Recruits 216

The Proposal for a College of Nursing 216

Central Medical War Committee: The Enrolment Letter 216

Scottish Medical Service Emergency Committee 217

The Work of an Aide-Major.—(*Illustrated*) 218

Brighton Territorial Hospital 218

Vacancies for Medical Officers 219

Convalescent Homes 219

The Dilke Memorial Hospital 219

Women's Maternity Unit for Russia 219

OBITUARY OF THE WAR:

Ernest Octavius Wight, L.R.C.P. Edin., M.R.C.S. Eng., D.P.H., Colonel and Assistant Director, Army Medical Service.—(*With Portrait*) 220

William Frank Thompson, B.A. Cantab., M.R.C.S., L.R.C.P. Lond., Lieutenant, Royal Army Medical Corps.—(*With Portrait*) 220

OBITUARY.

Guido Baccelli 213

Charles Henry Fox, M.D. St. And., F.R.C.P. Edin., M.R.C.S. Eng. 214

Northcote William Spicer, M.R.C.S., L.S.A. 214

The Late Sir Frederic Hewitt 214

MEDICAL NEWS.

The Dr. Dauber Memorial Nurses' Prize Fund 180

Release of a Medical Man in the Cameroons 201

A Domestic Economy Exhibition 201

Dundee's Low Birth-rate and High Death-rate 201

Centenarians 208

Donations and Bequests 208

Plymouth Hospital Sunday Fund 209

Death of Mr. Reginald Kottlitz, J.P. 209

Lectures on Milk, its Supply and Distribution 210

Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England: Pass-list 220

Royal College of Surgeons of England: Dental Licences conferred 221

Royal Meteorological Society 221

Memorial Service at St. Bartholomew's 221

PARLIAMENTARY INTELLIGENCE.

House of Commons: Medical Men and War Service.—Recruitment of Medical Students.—Discharge for Physical Incapacity from the Army.—Vaccination Statistics.—The Eyesight of Recruits 221

Appointments 222

Vacancies 222

Births, Marriages, and Deaths 223

Notes, Short Comments, and Answers to Correspondents 223

Meteorological Readings 224

Medical Diary 224

Acknowledgment of Communications received 226

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

PAGE

BAILLIERE, TINDALL & COX:—
Adams & Cassidy's Acute Abdominal Diseases ... 3
Bigg ... Indigestion ... 6
" ... War Diseases (Typhus, Enteric, Dysentery, and Cholera) ... 6
Castellani & Chalmers' Tropical Medicine ... 3
Clarke, E... Errors of Accommodation and Refraction of the Eye Cover 1
Dieulafoy's Text-book of Medicine 3
Freyer ... Enlargement of the Prostate ... 6
" ... Surgical Diseases of the Urinary Organs 6
Heath ... Aural Suppuration: Its Arrest, with Preservation of the Hearing ... Cover 1
Heitzmann's Urinary Analysis and Diagnosis by Microscopical and Chemical Examinations 3
McCaw's Diseases of Children ... 3
May and Worth's Diseases of the Eye ... 3
Morison's Motor and Sensory Disorders of the Heart ... 3
Mummery .. Diseases of the Colon and their Surgical Treatment .. Cover 1
Pickerill's Prevention of Dental Caries and Oral Sepsis ... 3
Tibbles' Dietetics; or, Food in Health and Disease ... 3
Tredgold's Mental Deficiency ... 3

PAGE

BAILLIERE—(Continued).
Tuckey's Hypnotism and Suggestion ... 3
Vulpius' Infantile Paralysis ... 3

SALE, SONS & DANIELSSON:—
Moullin ... When to Operate in Inflammation of the Appendix .. Cover 1

CHURCHILL, J. & A.—
Cameron .. Diet and Disease in Infancy ... Cover 1
Eden's Manual of Midwifery Cover 1
Fenwick .. Cancer and Tumours Cover 1
" .. Ulcer and its Consequences .. Cover 1
Ghon ... The Primary Lung Focus of Tuberculosis in Children Cover 1
St. Thomas's Hospital Reports Cover 1
Squire's Pocket Companion to the British Pharmacopœia, 1914 26
The Medical Directory, 1916 Cover 1
Thorne, Besly ... Schott Methods of the Treatment of Chronic Diseases of the Heart ... 6
Transactions of the Ophthalmological Society of the United Kingdom ... Cover 1
Warren ... Text-Book of Surgery Cover 1

PAGE

FROWDE AND HODDER & STOUGHTON:—
McCann .. Cancer of the Womb: Its Symptoms, Diagnosis, Prognosis, & Treatment .. Cover 1

GRIFFIN & CO.:—
West ... Diseases of the Organs of Respiration ... 6

HUMPHREY MILFORD:—
Berkart ... Bronchial Asthma: Its Pathology and Treatment .. Cover 1
" ... Nervous Asthma: Its Pathology and Treatment .. Cover 1

KIMPTON:—
Braun's Local Anæsthesia: its Scientific Basis and Practical Use ... Cover 1
Lewis & Mark ... Cystoscopy and Urethroscopy for General Practitioners ... Cover 1

LEWIS & CO:—
Moullin ... Enlargement of the Prostate ... Cover 1

MEDICAL PUBLISHING CO.:—
Lane, Sir A. ... Operative Treatment of Fractures ... 6

MILLS & BOON:—
Ash ... How to Treat by Suggestion .. Cover 1
" ... Mental Self-Help Cover 1

MURRAY:—
Brunton, Sir L. ... Therapeutics of the Circulation ... 6

PAGE

SAUNDERS COMPANY:—
Anders & Boston .. Medical Diagnosis .. 5
Bandler ... Medical Gynæcology. 5
Dorland's Illustrated Medical Dictionary ... 5
Kemp ... Stomach, Intestines, and Pancreas ... 5
Some Useful Books from Saunders' List ... Cover 1
Stelwagon .. Diseases of the Skin. 5
Thomson .. Clinical Medicine .. 5

STENHOUSE—
Newman .. Hæmaturia, a Symptom: Its Causes and Diagnosis Cover 1

THACKER & CO.:—
Lukis, Sir P., & Blackham Tropical Hygiene. For Residents in Tropical and Subtropical Climates..

WRIGHT & SONS (BRISTOL):—
Index of Treatment ...

MEDICAL LIBRARIES, &c.:—
Baker, Birmingham—Books ... 7
Behnke—Stammering, Lisping, and Cleft-Palate Speech ... 7
Ketley—Stammering ... 7
Lewis's Circulating Library Cover 1
Matthews—Wood: Application of Trusses to Hernia ... 6
Squire's Pocket Companion to the new British Pharmacopœia. 1914 ... Cover 1

OFFICIAL AND GENERAL ANNOUNCEMENTS

APPOINTMENTS VACANT:—
Birmingham General Dispensary. 50
Borough Hospital, Birkenhead .. 50
Bristol Royal Infirmary ... 50
Bury Infirmary ... 50
Chelmsford and Essex Hospital, Chelmsford ... 51
Chesterfield and North Derbyshire Hospital ... 51
City of Sheffield Tuberculosis Dispensary ... 50
County Asylum, Whittingham 49
Derbyshire Royal Infirmary ... 50
East Sussex County Asylum, Hellingly ... 49
Elder Dempster & Co., Liverpool.. 51
Gravesend Hospital ... 50
Greenwich Union Infirmary and Workhouse ... 50
Hospital for Consumption, &c., Brompton ... 50
Leeds Public Dispensary ... 49
Liverpool Royal Infirmary ... 50
Manchester Northern Hospital for Women and Children ... 49
Monmouth County Asylum ... 52
North Ormesby Hospital, Middlesbrough ... 50
Parish of Dunrossness ... 51
Parish of Liverpool—Brownlow Hill Institution ... 50
Queen Charlotte's Lying-in Hospital ... 51
Queen's Hospital for Children, Bethnal Green ... 50
Royal Albert Hospital, Devonport ... 51
Royal Albert Edward Infirmary and Dispensary, Wigan ... 50
Royal Free Hospital, Gray's Inn-road ... 49
Scarborough Hospital and Dispensary ... 50
Victoria Hospital for Children, Chelsea ... 50
Warneford General Hospital, Leamington Spa ... 49
2nd Line Welsh Border Mounted Brigade ... 51
West Kent General Hospital, Maidstone ... 51
Wrexham Infirmary ... 49

ASSISTANCIES, MEDICAL:—
Arnold & Sons, Giltspur-street.... 51
M.D., Kennington Cross... 51
No. 660, L.O., Strand ... 51
No. 694, L.O., Strand ... 51
No. 708, L.O., Strand ... 51
No. 710, L.O., Strand ... 51

ASSISTANCIES—(Continued).
No. 712, L.O., Strand ... 51
No. 713, L.O., Strand ... 51
No. 714, L.O., Strand ... 51
Turner, Adam-street ... 51
X. Y. Z., Edinburgh... 51

ASYLUMS, HOMES, &c.:—
Abbotswood House, Cinderford .. 47
Ashwood House, Kingswinford .. 44
Barnwood House Hospital ... 45
Bishopstone House, Bedford ... 44
Brunton House, Lancaster ... 44
Buntingford House Retreat, Buntingford ... 47
Camberwell House, Peckham-road 48
Canel Lodge Retreat and Sanatorium, near Folkestone ... 47
Cheadle Royal ... 45
Clarence Lodge, Clapham Park .. 44
Colthurst House School, Alderley Edge ... 44
Coppice, The, Nottingham ... 45
Dairymple House, Rickmansworth 47
David Lewis Colony, Alderley Edge ... 44
Duff House, Banff ... 48
Edgar Allen Institute, Sheffield .. 49
Faraday House, Clapham Common ... 49
Ghyllwoods ... 47
Grove House, Church Stretton 45
Grove, The, Catton, Norwich ... 45
Haslemere Nursing Home ... 49
Haydock Lodge, Newton-le Willows ... 46
Heigham Hall, Norwich ... 45
Home for Epileptics, Maghull 44
Invernith Sanatorium, Colinsburgh ... 47
London Fever Hospital ... 45
Malling Place, Kent ... 45
Melbourne House, Leicester ... 47
Mendip Hills Sanatorium ... 48
Meyrick, Brighton ... 49
Moat House, Tamworth ... 45
Mundesley Sanatorium, Norfolk.. 48
Newmains Retreat, Lanarkshire.. 47
New Saughton Hall, Polton, Midlothian ... 46
Nordrach-on-Dee, Banchory 48
Northumberland House, Finsbury Park ... 48
Northwoods House, Winterbourne 48
No. 383, L.O., Strand ... 49
No. 412, L.O., Strand ... 49
Otto House, West Kensington ... 44
Peckham House... 47
Pendyffryn Hall Sanatorium, Nordrach-in-Wales ... 48

ASYLUMS—(Continued).
Plympton House, Plympton ... 45
Portsmouth Corporation Mental Hospital ... 44
Royal Earlswood Institution for Mental Defectives ... 46
Rudgwick Sanatorium Sussex ... 49
St. Andrew's Hospital, Dollis Hill ... 49
St. Andrew's Hospital, Northampton ... 45
St. George's Retreat, Burgess Hill 44
St. Luke's Hospital for Mental Diseases ... 44
Springfield House Private Asylum, Bedford ... 44
Stretton House, Church Stretton.. 45
The General Manager, Cravenstreet ... 49
The Grange, near Rotherham 45
Vale of Clwyd Sanatorium ... 49
Warneford Asylum, Oxford... 44
Wye House, Buxton... 45

HEALTH RESORTS, BATHS, &c.:—
Alexandra Therapeutic Institute.. 44
Smedley's, Matlock ... 45

HOMES WANTED:—
No. 718, L.O., Strand ... 52

HOUSE & ESTATE AGENTS:—
Bedford & Co., Wigmore-street.... 52
Elliott, Son & Boyton, Vere street ... 52
Ley Clark, Wimpole-street ... 52

LIFE & FIRE ASSURANCES, &c.:—
General Life Assurance Co. 41
National Provident Institution .. 41
Prudential ... 41

MEDICAL ACCOUNTANTS, &c.:—
Turner ... 52

MEDICAL AGENTS:—
Fieldhall, Limited... 53
Manchester Clerical, &c., Association ... 52
Medical Agency ... 55
Needes, Herbert... 55
Needes, J. C. ... 55
Peacock & Hadley... 55
Turner ... 55

MEDICAL SCHOOLS:—
(LONDON.)
London School of Clinical Medicine ... 41
West London Post-Graduate College ... 41

NURSING INSTITUTES:—
Army and Navy Male Nurses Co-operation ... 43
Co-operation of Temperance Male and Female Nurses ... 42
General Nursing Association ... 41
Hospital for Sick Children, Great Ormond-street ... 43
London Nurses' Association ... 43
London Temperance Nurses Co-operation ... 43
Male Nurses Temperance Co-operation... 43
Mental Nurses Association ... 43
Mental Nurses' Co-operation... 43
Nurses' Association, York-street.. 42
Nurses' Co-operation, Portland-place ... 42
Registered Nurses' Society... 43
St. John's House ... 43
St. Luke's Hospital, E.C. ... 43
Temperance Association of Male Nurses, Ltd. ... 42
Temperance Male Nurses Co-operation ... 42
The Retreat, York ... 41

OFFICIAL NOTICES:—
City of London Lying-in Hospital ... 41
London School of Tropical Medicine ... 41
Queen Charlotte's Lying-in Hospital ... 41

PARTNERSHIPS & PRACTICES:—
Arnold & Sons, Giltspur-street.... 51
Dickinson, Millom ... 51
Lee & Martin, Birmingham ... 51
No. 711, L.O., Strand ... 52
No. 715, L.O., Strand ... 52
Turner, Adam-street ... 51

RAILWAY & STEAMSHIP CO.'S.:—
New Zealand Shipping Co.... 41

SCHOOLS, PREPARATORY, &c.—
Paton, Cannon street... 41

TUTORS & LECTURERS:—
Beckton ... 41
Med. Correspondence College 41
Weymouth ... 41

For Index to Trade and Miscellaneous Advertisements see page 4.

Investigations
ON
CLINICAL THERMOMETRY:
CONTINUOUS AND QUASI-CONTINUOUS TEMPERATURE RECORDS IN MAN AND ANIMALS IN HEALTH AND DISEASE.

BY G. SIMS WOODHEAD, M.A., M.D., LL.D.,
PROFESSOR OF PATHOLOGY, CAMBRIDGE;
AND
P. C. VARRIER-JONES, M.A., M.R.C.S., L.R.C.P. LOND.,
FOUNDATION SCHOLAR, ST. JOHN'S COLLEGE, CAMBRIDGE.
(*From the Pathological Department, University of Cambridge.*)

PART I.—THE CLINICAL THERMOMETER.

IN these days of routine temperature taking and recording it is difficult to realise that "Clinical Thermometry" was introduced no longer than 60, nay even 50, years ago. Isolated and intermittent observations on the variations of the temperature of the human body in the course of disease had been made by thoughtful and scientific physicians, especially those of the Edinburgh School—G. Martine,[1] G. Cleghorn,[2] J. Currie,[3] A. Arnott,[4] and others; but no systematic clinical thermometry was attempted by the medical profession until Wunderlich's classical work was published, a work that could not have appeared had not Lord Kelvin in 1849 established his "Absolute Scale of Temperature." From 1857 to 1865 Wunderlich[5] taught with wonderful grasp and determination the value of the clinical thermometer, and with such success that a new era opened in medicine and surgery.

Since that date the clinical thermometer has proved of such assistance to the physician and surgeon in diagnosis, treatment, and prognosis that several efforts, some successful, others less so, have from time to time been made to obtain not isolated but continuous records of temperature in health and disease. Determining to supplement these efforts and to continue the investigations, we have for some time past been giving considerable attention to a study of the best method of obtaining, over prolonged periods, continuous records of the temperature not only of human patients but of the lower animals. The results of these investigations we now propose to give, first because they may be of interest to others, and, secondly, in order that those who become interested may take up the work, and, should they find it sufficiently productive, continue along the lines of our investigations. Before doing this, however, we should like to give a short sketch, laying especial stress on British work, of the advance of clinical thermometry.

THE EARLY HISTORY OF CLINICAL THERMOMETRY.

Hippocrates (460–370 B.C.) was well acquainted with the fact that during certain phases of disease the temperature of a patient may vary greatly, but it was not until a couple of thousand years had elapsed that the matter was deemed worthy of consideration by his successors.

Sanctorius of Padua,[6] in his Commentary on the first book of the Canon of Avicenna (Venice, 1625)* describes a thermometric apparatus, and though this is not quite clear from the text, assumes it as his own invention and manufacture, and to him certainly must be ascribed the idea of measuring degrees of heat by noting the expansion of matter as it is heated. He claims that with this apparatus he could determine the variations of temperature of the human body during the course of certain fevers.† He was, however, so far ahead of his time that his work seems to have attracted little or no attention, and it was left to Boerhaave[7] a hundred years later, to maintain that "external febrile heat is recognised by the thermometer," and for van Swieten,[8] one of Boerhaave's pupils, to point out, in 1745, that the estimation of temperature by the hand is uncertain, though he and his colleague, de Haen,[9] undoubtedly extended the practical application of thermometry in the study of disease.

The method of using the thermometer adopted by the latter appears to have been somewhat crude and unsatisfactory, as he recounts that although he always kept the instrument (not a maximum thermometer) *in situ* for 7½ minutes, when he took a reading, *he added one or two degrees Fahrenheit to*

* Sanctorius does not describe the thermometer in "De Statica Medicina," as might be concluded from the reference in Gamgee's paper.

† Martine writes (Essays, 1740, p. 177): "It is not our business a present to determine to whom we owe that noble and useful discovery; whether to Sanctorio, to Galileo, to Father Paul, or to Drebbel: for I find it ascribed to all these by their respective favourers and admirers. [In a footnote he adds: 'The invention is given to Drebbel by his countrymen Boerhaave (Chem. I., 152, 156) and Musschenbroek (Tent. Exp. Acad. Cim. Add. p. 8, Ess. de Phys. § 946). Fulgenzio (Life of Father Paul, p.m. 158) ascribes it to his master Father Paul Sarpi, that great oracle of the republic of Venice. But there was an humour prevailed, in those days, of fathering almost all the curious discoveries of the age on that great statesman and virtuoso. Vincenzio Viviani (Vit. de l'Galil. p. 67. See too Oper. di Galil. Pref. p. 47) speaks of Galileo as the inventor of thermometers. But we know how much and how fondly he adored the memory of his great master. (See Hist. Acad. des Scien. 1703, pp. 169, 175, 176, 180.) Still, all these are posthumous claims, and they, too, imputed by others. But Sanctorio himself (Com. in Galen. Art. Med. pp. 736, 842. Com. in Avicen. Can. Fen. I. pp. 22, 78, 219) expressly assumes the invention in question. And Borelli (de Mot. Animal. II. Prop. 175) and Malpighi (Oper. Posth. p. 30) ascribe it to him without reserve. And these Florentine academicians are not to be suspected of partiality in favour of one of the Patavinian School.']

At first, as is the fate of all other inventions, thermometers were but rude and imperfect machines, and not easily to be applied to so many purposes as came afterwards to be in use. They were very clumsy; and, as the various degrees of heat were pointed by the different contraction or expansion of air, they came afterwards to be found uncertain, and sometimes to be deceiving measures of heat; as the bulk of air was affected not only by the difference of heat, but likewise by the difference of weight of the atmosphere."

Drebbel (1572–1634) is regarded as the inventor of the air thermometer; Galileo (1574–1642) of the spirit thermometer (the Florentine thermometer); and Réaumur (Ole Römer) (1644–1710) of the mercurial thermometer (Jnl. Amer. Med. Ass., 1912, p. 1473).

Sir Isaac Newton used linseed (lintseed) oil—"A homogeneous fluid enough and capable of a considerable rarefaction, and not having been observed to freeze even in very great colds and able to bear a great heat without boiling." Martine, from whose work the above is a quotation, also says (p. 196): "The great Sir Isaac Newton thought the settling the degrees of Heat and Cold well worth his notice; and, as he carried everything he meddled with beyond what anybody had done before him, and generally with a greater than ordinary exactness and precision, so he laid down a method of adjusting thermometers in a more definite way than had been done hitherto." This linseed oil was placed in a glass tube.

Wilks (Brit. Med. Jour., Oct. 20th, 1900, p. 1212) gives an interesting account of a scale described in a paper attributed to Sir Isaac Newton, but definitely stated to be by him by Martine (op. cit., p. 195) ("Scala graduum caloris," Phil. Trans., London, 1701, vol. xx., p. 824, April, 1701), in which the temperature of the human body is calculated as coming at a definite point between the temperature of thawing snow and the heat of water boiling strongly. "Supposing the bulb when immersed in *thawing snow* to contain 10,000 parts, he found the oil expanded by the heat of the *human body* so as to take up 1,39th more space, or 10,256 such parts; and by the heat of *Water boiling* strongly 10,725; and by the heat of *melting Tin* 11,516, beyond which he did not carry his Oil Thermometer. So that, reckoning the *freezing point* as a common limit between heat and cold, he began his scale there, making it gr. 0; and the heat of the *human body* he made gr. 12; and consequently the heat of *boiling Water* was expressed by gr. $34 = \frac{725 \times 12}{256}$; and *melting Tin* by gr. 71." (Martine, p. 196.)

Fahrenheit also made the temperature of the human body his fixed starting point, from which he worked upwards and downwards, but he took the temperature of a mixture of ice and salt as his zero point, and counting the body temperature 12, he found that the freezing point of water on his scale was 8 and the boiling point of water 53°. In order to lengthen his scale he multiplied all the above figures by 4, and obtained the figures 0, 32, 98, and 212. Wilks, who quotes from the "Encyclopædia Britannica," says that he wishes to accept this, and that he does not think that the wish is father to the thought.

the temperatures registered "because he found the mercury would rise as much if left longer." De Haen, however, appreciated the importance of a normal standard, and made a number of observations on the temperature of healthy people at various ages, comparing his results with those he obtained in the sick room. The morning remission and evening exacerbation of temperature in fevers were well known to him. He used variations of temperature as aids to the control and direction of his therapeutics, and regarded the return of the temperature to normal as a proof of convalescence.

A few years earlier, however, George Martine,[1] trained partly in Edinburgh University but a graduate of the University of Leyden, dating from St. Andrews, August, 1738, had published the first accurate observations on the temperature of healthy man and animals. His "Essays and Observations" are considered by Garrison [10] to be the only scientific treatment of the subject that we have, earlier than that given to it by Wunderlich, and he it was who appears to have stimulated Haller's follower, Marcard [11] to the observations in his dissertation which appeared in 1741, and to have encouraged Pickel [12] to record his experiments on the influence of bathing in rivers on the body temperature which were published in 1778.

POSITION IN LATTER HALF OF EIGHTEENTH CENTURY.

Cleghorn [2] and Lining (a description of the American Yellow Fever, letter to Whyte published in Edinburgh, May 7th, 1754) both refer to their observations of the corporal temperature, the former in pneumonia as early as 1745, when he describes "an intense heat over the whole body which raises the mercury in the thermometer to the 103rd or 104th degree, and in pleurisy, in which he states that the external heat of the body was in several very moderate, in some less than natural, but for the most part it was so intense as to raise the mercury in Fahrenheit's thermometer to the 102nd degree, and often in the afternoon to the 104th (p. 244); the latter in yellow fever before December, 1753.

In 1775 Blagden,[13] writing in the Philosophical Transactions, published a series of observations and experiments as the outcome of which he was able to insist upon the remarkable power of accommodation for changes of temperature possessed by warm-blooded animals, and the maintenance of normal temperature in healthy men in rooms heated to the boiling point of water. These experiments by Blagden led John Hunter [14] to publish his experiments, begun in 1766, by which he proved that animals are able to resist external cold because they produce in themselves heat enough to counterbalance all loss. Hunter also noted in his "Treatise on the Blood, &c.," in 1793 (p. 338 of reprinted works) that local inflammation produces a rise in temperature at the inflamed spot, and he held most tenaciously that body heat is not produced by the circulation of the blood.

> It is very evident [he says] that warmth depends on a different principle which is intimately connected with life itself and is a power which maintains and regulates the machine independent alike of the circulation, the will, and of sensation

In the Philosophical Transactions for 1778 he writes:—

> In the course of a variety of experiments on animals and vegetables I have frequently observed that the result of experiments in the one has explained the œconomy of the other and pointed out some principle common to both; I have, therefore, collected some experiments which relate to the heat and cold of those substances. Having found variations in the degree of heat and cold in the same experiment, for which I could not account, I suspected that this might arise from some imperfections in the construction of the thermometer. I mentioned to Mr. Ramsden my objections to the common construction of that instrument, and my idea of one more perfect in its nature, and better adapted to the experiments in which I was engaged. He accordingly made me some very small thermometers, six or seven inches long, not above two-twelfths of an inch thick in the stem, having the external diameter of the ball very little larger than that of the stem, on which was marked the freezing point. The stem was embraced by a small ivory scale, so as to slide upon it easily, and retain any position. Upon the hollow surface of this scale were marked the degrees which were seen through the stem. By these means the size of the thermometer was very much reduced, and it could be applied to soft bodies with much more ease and certainty, and in many cases in which the former ones could not be conveniently applied. I therefore repeated with it such of my former experiments as were not originally satisfactory, and found the degrees of heat very different, not only from what I generally imagined, but also from what I had found by my former experiments with thermometers of the common construction.

Lavoisier and Laplace [15] (the celebrated astronomer), 1780, investigating the cause of animal heat, ascribed it to the chemical combination of oxygen with hydrogen and carbon in respiration.

In 1797 James Currie,[3] of Liverpool, trained in Edinburgh but a graduate in medicine of Glasgow University, in applying water, both cold and warm, as a remedy for fever and other diseases, made great use of thermometric methods, upon which he depended greatly for indications as to the results of his treatment. He tested the action of warm and cold baths, of digitalis, opium and alcohol, and of restricted diet in the production of alterations of temperature.‡ So great was the value placed by him upon temperature observation as an aid to diagnosis and treatment that he was looked askance at by the rest of the profession, and this part of his work was commented on by his German translator as affording a glaring instance of the miserably backward state of medicine in England (Wunderlich [5]). As indicating the value of contemporary criticism, Weir Mitchell [16] finds "absolute genius" in Currie's book (Garrison,[10] p. 288).

CLINICAL THERMOMETRY IN EARLY PART OF NINETEENTH CENTURY.

Elisha North,[17] who recommended the use of the thermometer in spotted fever; Sir Benjamin Brodie,[18] who observed, in a case in which there was laceration of the lower part of the cervical portion of the spinal cord, that when the ball of the thermometer was placed between the scrotum and the thigh the quicksilver rose to 111° F., and that immediately after death the temperature was determined in the same manner and was found to be still the same; Dalton,[19] John Davy,[20] § both of these latter opposing Brodie on his theory as to the

‡ Currie writes in vol. i., p. 11: "The pulse varied from 130 strokes in the minute to 160; the heat rose in one case to 106° of Fahrenheit, but was in general from 101° to 103°; towards the latter stages of the disease it was scarcely above the temperature of health"; and on p. 24: "On the 18th at noon, his pulse was 95 and soft; his skin moist, but a little above the natural heat. His tongue was a little furred, and his head ached; he also complained of thirst; the heat at the axilla was 100°," &c. And so throughout a number of histories of cases. In vol. ii., p. 65, Dr. Gregory, writing to Currie about cases of scariatina, said: "I did not take time to measure the heat of his skin by the thermometer; but I think it must have been at least 104° of Fahrenheit."

§ Dr. John Davy, in "Physiological Researches," gives the fluctuations of temperature within the limits of health in temperate regions (England) as highest in the morning between 7 and 8 (98·74° F.), 98·52° in the afternoon from 3 to 4, and 97·92° at midnight. He also states that it fluctuates till nightfall and is lowest about midnight, with an average difference of about 0·82°.

influence of the nervous system on animal heat; Gentil,[21] Thomson,[22] and Sir Everard Home,[23] who, we are not astonished to find, obtained records of some remarkably high temperatures, 118° F. in one instance, all studied clinical thermometry at the beginning of the nineteenth century, but it was left, in the early years of the renaissance of science, 1835 and onwards, to Becquerel and Breschet[24] and their followers to bring forward series of observations made with exceedingly sensitive thermometric apparatus on the variations of temperature in different parts of the bodies of animals. It was noted that inflamed parts had a higher temperature than that recorded for the rest of the body. No attempt was made, however, to register these temperatures or to obtain any continuous or automatic records. In 1836 Berger[25] made a study of the temperatures of various species of animals.

The use of the thermometer in medical practice was, however, still regarded with suspicion, though individuals, Bouillaud,[26] Donné,[27] Piorry,[28] Wistinghausen,[29] Friedrich Hermann and D. Nasse,[30] in addition to those already mentioned, claimed the thermometer as an instrument to be used in connexion with clinical investigation and treatment. During the whole of the first four decades of the nineteenth century, however, the observations made on the temperature of the human body under varying conditions were but scanty, and as Hermann Nasse, in 1839,[30] puts it: "For some years past the science of thermometry has been more neglected than formerly and, indeed, remains almost *in statu quo*" (quoted by Wunderlich).

In the *Medical and Physical Journal* (London, 1800, vol. iii., p. 304) a short descriptive notice is given of a portable thermometer (price 18*s*., provided by Messrs. Allen and Howard, chemists, in Ploughcourt, Lombard-street, E.C.), designed to ascertain the heat of the human body. The instrument, enclosed in a cylindrical case, was about 5 inches long and ¼ inch in diameter. The scale (about 80° to 112°) was attached to the tube. This instrument was so sensitive that the temperature was indicated in less than 10 seconds and might be read to a quarter of a degree.

In its early history clinical thermometry was very closely linked up with hydropathy. Dr. Henry Willson[31] draws attention to an article in a "Report of the Society for Bettering the Condition of the Poor," 1808. This article, entitled "Cases of Typhus Fever in which the Affusion of Cold Water has been Applied in the London House of Recovery," is by Dr. W. P. Dimsdale, and contains interesting records of thermometry in connexion with this fever—"a thermometer placed under the tongue arose to 104°."

Dr. Lloyd Jones[32] unearthed a most interesting note from "Notes on a Diary kept chiefly in Southern India, 1881–6," by the Right Hon. Sir Mountstuart E. Grant Duff, G.C.S.I. (vol. ii., p. 208), in which a communication from Dr. Birdie is quoted to the following effect:—

> I also send a copy of the Report of the Committee on the Epidemic Fever in the Southern Provinces, which prevailed 1809–11. ..... Your Excellency will be pleased to notice, at the top of p. 52 [of the report], that the Committee used the thermometer as a clinical instrument long before its use as such was revived in Europe (*sic*). ..... Curious to say, that lunatic, Tippu Sultan, has some inkling of the use of the thermometer in disease, as, according to Wilks, he wrote and asked Cossigny, the Governor of Pondichéry, for an instrument of this kind, which when the sick man places his hand on it the ascent of the quicksilver will mark the height of the disease.

It is interesting to note that Archibald Arnott, an Edinburgh graduate (1815), Surgeon 20th Regiment, who was probably acquainted with Currie's treatise first published in 1797, makes the following observation whilst in attendance on Napoleon at St. Helena.[4] On April 1st, 1821, Arnott first visited Napoleon and "as a result of the examination he could discover no tension or hardness of the abdomen, the pulse was tranquil and the heat moderate."[33] On April 3rd "he passed a tolerably tranquil night and slept a good deal, his pulse was 76, heat 96; skin more moist than natural, &c." ¶[4]

PROGRESS IN MEDICAL THERMOMETRY FROM 1840.

From the year 1840 a distinct advance in medical thermometry may be dated, and facts relating to temperature both in health and disease now began to accumulate and to be considered not as isolated observations but as having real clinical significance. In this year Arnold[34] gives a very complete account of his investigations in thermometry in health and disease in his "Practical Treatise on Bilious Remittent Fever."

> "Preliminary experiments on the temperature of the system were instituted for the purpose of ascertaining the exact temperature of every class of residents in the island, in a state of health, and under the various circumstances which are mentioned" (preface). To ascertain the normal temperature the experiments were made "upon every denomination of subject at different periods of the year, at different times of the day and under a great variety of circumstances," and the author found that "the mean of the whole series comprising 107 subjects of all denominations, ages and sexes is 98·19 3/12th, which may be considered a correct estimate of the temperature of the system in health and as enjoyed in a climate like Jamaica." He took the temperature under the tongue and in the axilla, and notes "there are generally one or two degrees of heat between the experiments under the tongue and in the axilla which was always found the lowest."
>
> He then discusses the importance of temperature in the febrile diseases, "for I have considered this symptom to be one of the most formidable with which we have to combat in the treatment of the bilious remittent fever, no matter where we may meet it; believing as I do that the system when labouring under this disease must inevitably give way to the cause which produces even a few degrees of thermal exaltation beyond 105° of Fahrenheit's scale, and that all our remedies will have little effect if we find it 110° during the first or second stages. I believe there is no study more calculated to improve the healing art or to throw more light on the nature of febrile diseases than a minute attention to the state of the temperature of the system."

In 1841 Andral[35] and, following him, Gierse,[36] plotted out a series of charts which they used in following the rise and fall of temperature as aids to the diagnosis and progress of disease. Moreover they, following Martine, took the precaution to obtain control charts of the temperature of normal individuals showing any rise or fall at various periods of the day, and to compare these variations of temperature with those observed and noted in disease. Then Hallmann,[37] Henri Roger,[38] and, a little later, Demarquay[39] and Zimmermann,[40] obtained and studied numerous records of temperature from cases of typhus and typhoid fevers, small-pox, measles, erysipelas, whooping-cough, tuberculosis, and pneumonia "as offering a simple basis for other observations free from all theoretical propositions." Dr. John Davy's observations[41] on temperature of healthy persons were most valuable; at a later date these were very fully discussed by Ogle.[42]

¶ See Sir Wm. H. Broadbent, Brit. Med. Jour., 1903, vol. i., p. 813.

To Bärensprung[42] and Traube[43] belongs the distinction of placing medical thermometry on a more sound footing, of coördinating and interpreting what had hitherto been put forward in isolated, imperfect, or framentary form, and of raising clinical thermometry "to the dignity of a comprehensive, well-constructed, and, in many respects, complete doctrine" (Wunderlich). They demonstrated most clearly that in the thermometer the physician and surgeon had a means of deciding what, in those days, without our modern aids to diagnosis, were difficult and greatly debated questions in their art. In this connexion Gamgee quotes Liebermeister[43a] as making important contributions on heat production and regulation in the warm-blooded animals, at the same time making very appreciative reference to Jürgensen which we shall consider later.

Dr. David Livingstone[44] used the thermometer in South Africa at a very early date, for we find in his "Missionary Travels in South Africa" the following: "The heat in the axilla, over the heart, and region of the stomach was, in my case, 100°; but along the spine and at the nape of the neck 103°" (p. 194). The observations were made in 1853 and published in 1857, and it is of interest to note that he was convinced that the temperature of Africans was 2° F. less than his own (p. 509). "The bulb held under my tongue stood at 100°, under that of the native 98°." This, along with the numerous references to thermometry made by Edinburgh men, affords strong proof that clinical thermometry was taught and practised in the Scottish schools some years before it was systematically practised south of the Tweed. Dr. Warburton Begbie, for example, a physician in the Edinburgh Royal Infirmary, acquired his first clinical thermometer in 1857 and induced his pupil, Dr. Brydon,[45] to make a prolonged series of observations with that instrument (similiar to that employed by Wilks) regarding typhus and typhoid fever.

ADVANCE IN THERMOMETRY AS A ROUTINE CLINICAL PRACTICE.

It is, however, to Carl Wunderlich[5] and his classical work on temperature and disease that we owe the great advance in thermometry as a routine clinical practice that took place soon after the middle of the nineteenth century. He accumulated an enormous mass of careful observations on temperature in disease, and, tabulating his results and studying them carefully, systematic thermometry in his hands became a recognised factor in clinical diagnosis, and important contributions to our knowledge of fever and other pathological conditions in which variations in temperature are involved were brought into great prominence.

Wunderlich held that the normal temperature of healthy individuals is well-nigh invariable.

> A healthy man, whether fasting or digesting, drinking water or stimulating fluids, employing mind or body, or in a state of listlessness, always retains his temperature [within half a degree] unless his health becomes disturbed. ..... In sleep the temperature of a healthy man is somewhat lower, but even then does not sink below 97·25° F.

Wunderlich, however, had foreseen the importance of a continuous 24-hour record, for we find that he insists that the temperatures met with in various diseases do not remain stable and unaltered during the 24 hours. Fluctuations are observed, these fluctuations being "in part dependent upon general rules, and in part determined by the nature, stage, and degree of the disease, or upon the increase or diminution of this."

It is now recognised that as regards the first of these statements we must accept as normal a much wider diurnal variation than was laid down by Wunderlich and those who followed him and copied his figures, whilst as regards the first point we are inclined, as the result of our experiments, to maintain that the exaggerated temperature variations induced by outside agencies are of prime importance, especially in the diagnosis of such diseases as tuberculosis, latent typhoid or pneumonia, and similar conditions. "The uninterruptedly regular observation of the progress of the temperature throughout the whole course of the disease furnishes the most important indications for the judgment of febrile affections."

The influence of Wunderlich's work was felt almost immediately; paper after paper appeared in quick succession and of the medical journals the *Medical Times and Gazette* became the special channel of distribution of thermometric lore.

It is, however, to Aitken's[46] advocacy of Wunderlich's work and to Allbutt's introduction of the clinical thermometer in its present form that we owe the rapid extension of clinical thermometry. In the third edition of his "Practice of Medicine" Aitken gives a very complete account of Wunderlich's investigations, and in precise and succinct form defines for the practitioner some of the more important factors in thermometry. He quotes Valentin (third edition, p. 39) to the effect that all warm-blooded animals surrounded by an atmosphere of 50° F. have a temperature of about 99·5° in the back of the mouth, the rectum or other accessible *internal parts*, and at *completely sheltered parts of the surface* it is a degree lower—namely, 98·4° or 98·5° F. Aitken points out that:—

> In tuberculosis, especially in its acute form, the persistent maintenance of an uniformly high temperature will alone show that no arrest in the progress of the disease has occurred (p. 48). Continuous daily observations by the thermometer thus teach the typical laws of particular forms of fever, and supply the grounds or basis by which it is determined whether any individual case is progressing as it ought to do (p. 47). It is rare, however, that a definite diagnosis or prognosis can be based on a single observation (p. 44). The amount of heat is also at first reduced after *a full meal* and the use of alcohol; but it rises again as digestion advances (p. 40). *Active exercise* (not carried to the extent of exhausting fatigue) raises the temperature proportionally to the degree of muscular exertion made (p. 40).

Writing, in 1866, "On the Use of the Thermometer as a Guide in the Diagnosis of Pyrexial Diseases," Dr. F. W. Gibson,[47] after indicating the work done by Wunderlich, refers to the chapter on the range of temperature in disease in Aitken's "Treatise of Medicine" as affording a new field of medical investigation.

> Before 1858 "the real importance of daily records of the temperature of the body in such [pyrexial] diseases was almost unknown," but "Drs. Parkes, Jenner, Ringer, and others are labouring in the same field in this country, and the day is not, I think, very far distant when the physician will consider the thermometer not less indispensable to him than the stethoscope or microscope, and when the surgeon will not neglect the observations of the temperature, since Billroth has brought forward sufficient proofs of its great importance as an assistance in the diagnosis of surgical diseases."

Following Wunderlich he gives the normal temperature as 98·5° F., and assents that it may rise for a short while above, or fall slightly below, this even in the healthy individual, but a permanent

rise above 99·5° F. or fall below 97·3° F. "is a sure sign of disease." He points out that exposure even in a fairly warm room induces a fall, as do also a full meal and the use of alcohol, but that there is a rise of temperature as digestion advances and that temperature is lowered by sleep. Finally, he claims that temperature is a much more certain guide to the pyrexial condition than is the pulse-rate, and that although the two often rise and fall together, this is by no means invariably the case, and instances the frequency of the pulse induced by weakness which is accompanied by a distinct lowering of the body temperature. He records that Mr. Griffin, Mr. Casella, and Messrs. Negretti and Zambra all manufacture most excellent thermometers, and refers to Dr. Aitken's maximum self-registering instrument, which does not require to be read *in situ*, but may be removed and inspected when convenient.

INVESTIGATIONS ON THE BODILY TEMPERATURE.

One of the most important of the papers that appeared about this time was a contribution to the subject by William Ogle, M.D.[48] This observer set out to obtain for man a standard normal temperature with which the temperatures met with in disease might be compared; to see what diurnal fluctuations might occur, and to determine the conditions on which such fluctuations might depend.

After referring to Dr. John Davy's two similar series of observations,[41] he compares Davy's results with his own, and points out what he holds are considerable differences, though when he compares sets of records taken from two different individuals he gives differences as marked as those he mentions as existing between Dr. John Davy's figures and his own. Dr. Ogle finds that the diurnal variations are greater in man than in the woman and run through a wider range. In the woman the temperature at 8.30 in the morning is 98° F., it rises steadily until the afternoon (3 to 5 P.M.) to 98·8°, and from this point it falls until midnight to 98°. No early morning temperatures were taken. In the man the temperature at 8.30 is about 3/10° lower than in woman, the highest point is reached at from 6.30 to 7.30 in the evening, and there is a steady fall until after midnight to 97·9° or 98°. On continuing the observations through the night it is found that the lowest temperature recorded, 97·2°, is between 6 and 6.30 A.M., and that from this point there is a steady rise. These variations always recur in the same individual whilst in health within a certain small range, 3/10°; though—

> In one person the maximum heat was attained at an earlier period in the day than was the case with the other; and this peculiarity recurs each time. So in one person the morning temperature was considerably higher than in the other, and this difference is repeated in each of the three months.

He maintains that the lowest temperature of the body occurs about daybreak; that after the maximum is reached in the afternoon or evening the change in temperature is at first slow, except when wine is taken, but becomes more rapid after 9 or 10 o'clock and continues till daybreak, when the cycle begins again. He found that the average diurnal variation is about 1·5° F., and hints at the effects of external cold and heat on the body temperature. He also discusses the effects of food and exercise and functional metabolic activity. Short exposure to cold raises the internal temperature but prolonged exposure has the opposite effect, as also has exposure to temperatures higher than that of the body. He agrees with Davy that exercise raises the temperature of the body—of the extremities much more than that of the internal organs. As regards food, he notes that both breakfast and lunch are followed by a considerable rise of temperature, but that there is usually a marked and rapid fall after dinner, and he thinks that this latter may be due, in some measure at any rate, to the "gradual cooling of the body heated by exertion. But this is not the whole explanation." He found that claret taken at dinner was always followed by a rapid fall of temperature, though after a time there was some recovery, and, indeed, that in some cases the temperature rises after alcohol has been taken to a point that cannot be considered normal. Tea, on the other hand, retards the fall very considerably. The greater part of the rise of temperature is due to the combined influence of exercise and metabolism. The "organic functions" which correspond more or less closely with those of animal life have a period of repose which is "less perfect and begins and ends earlier" than that of the functions of animal life.

In a series of unsigned articles on the thermometer in disease that appeared in the *Medical Times and Gazette* during 1866, the importance of the use of the thermometer in different diseases is, as above indicated, referred to, and it is insisted that "in every case of fever, no matter from what it originates, the temperature is elevated, and this elevation of the temperature is the only constant symptom of fever." Instructions and warnings are given as to the use of this instrument. The temperature should be taken twice in the day, at 8 A.M. and 8 P.M., and it is stated that it is better to use a thermometer constructed for the purpose, those of the ordinary make being often untrue and always difficult of application. It is pointed out that in health there may be an elevation amounting to 2° or 2·5° F., from a minimum temperature of 97° to a maximum of 99° or 99·5°, and that the daily variations of the temperature in health are greater in young people than in adults, that the lowest temperature is reached usually between 12 P.M. and 4 A.M., and a maximum about 12 noon, and that all this must be taken into consideration in interpreting the temperature in cases of disease.

The importance of a rise of temperature in inflammatory and tuberculous conditions is insisted upon. "While tubercle is being deposited in any of the organs of the body the temperature of the patient is preternaturally raised," and the writer continues: "Temperature is a measure of the rapidity with which tubercle is being deposited in any of the organs of the body." If there be a chronic elevation of the temperature and this be not due to rheumatism, ague, suppuration, or chronic induration of the lung, such an elevation must be considered to be due to a tuberculous deposit in the body.

In the June number of the same volume Dr. F. W. Pavy, F.R.S.,[49] describes a case which, he argues, justifies the employment of the thermometer as a means of affording information in disease and as exemplifying "the extent of variation of temperature that may be in the course of disease within a few hours produced, and of the precision with which thermal manifestations transpire."

SUMMARY OF OTHER INVESTIGATIONS.

Sydney Ringer, M.D., and Walter Rickards, M.D., in a work "On the Temperature of the Body as a Help to Diagnosis in Tubercular, Cancerous and Other Forms of Consolidation of the Lungs,"[50] point out that the temperature of the body is always preternaturally elevated while tubercle is being deposited in any of its organs, a condition wanting, they maintain, in cases of cancer unless associated with the formation of abscess and the production of pus.

Dr. J. S. Warter, in 1866,[51] writes:—

> In health there is a normal daily elevation often from 2 to 2·5 degrees Fahrenheit, the morning temperature being the lowest and the evening one the highest. A full meal and the ingestion of alcohol is also said to lower *pro tempore* the heat of the body.

He maintains that sufficient information may be obtained from a single observation per diem made at midday. The claim that observations should be made at the same time each day is thoroughly sound, whether these observations are made once or twice a day, but there is little doubt that he is in error in assuming that these one or two daily observations are sufficient for all clinical purposes, an error that soon became patent to intelligent clinicians.

During the epidemic of cholera in London in 1866 Mr. F. M. Mackenzie made "Notes on Various Subjects Connected with Cholera as Observed in the London Hospital" (Appendix to vol. iii. of the "Clinical Lectures and Reports by the Medical and Surgical Staff of the London Hospital," London, 1866). These notes contain a statement of the temperature observed in the armpit and in the rectum or vagina respectively in 40 cases of "extreme collapse." The average temperature of these cases was 94·9° F. in the armpit and 100·6° in the vagina or rectum, whilst the extremes of temperature noted were 91·2° and 105·6°. In the groin the temperature is about 2° higher than it is in the armpit (quoted by Chapman).[52]

W. Ainslie Hollis, M.B. Cantab., in 1867[53] contributed a series of excellent observations made with thermometers manufactured by Smith and Beck and by Casella, two of them curved, three of them straight registering instruments.

> As a rule, even in acute diseases, I rarely exceeded a single observation daily; in chronic cases one or two observations a week were usually sufficient. The hours selected were various, but *as nearly as might be the same for each case.*

We can scarcely agree with the following:—

> I cannot allow this subject to pass [he says] without strongly reprobating the practice of taking in severe cases several (sometimes even hourly) observations in the day; this *simia cura medici* (if worthy of the term) can do no commensurate good to science compared with the inconvenience, not to say distress, which it occasions patients who have to submit to it.

He gives lists of the morbid or vital processes which "probably" tend (*a*) to lower and (*b*) to increase the temperature of the body.

A series of most valuable papers on temperature was contributed by E. Long Fox,[54] who claims that the thermometer rightly used may be of the greatest value to the busiest practitioner and in many cases, "paradoxical as it may sound, will save his time." He makes a reservation, however, that too much must not be expected from the thermometer and that, "as a preliminary remark, it is useful to remember that, for all persons, under all conditions, the normal temperature is so nearly the same as only to vary by about 1° Fahr.," and that "pathological temperature is embraced within the limits of about 15·3° F.," that the temperature of 100° indicates fever, one of 96·8° "as indicating an algide condition due to some depressing influence," such as those immediately following acute disease in debilitated subjects, the use of drugs, hæmorrhage, prolonged vomiting and diarrhœa, and rigid diet in convalescence, all of which he claims are causes of a more or less temporary character. Causes of more persistent type are disturbed circulation from organic disease of the heart, diseases interfering with the respiration, the agony of certain diseases, alcoholism and chronic uræmia in which owing to the toxic condition of the blood oxidation of the tissues is interfered with, malnutrition due to the interference with the ingestion of food, dropsy and anæmia and certain chronic morbid conditions of the brain such as melancholia and dementia. He points out, however, that it is specially useful where there is a rise of temperature, and in his long series of articles indicates that the character of the temperature may be of great value in diagnosis, instancing the regular ascent, prolonged stationary period, and gradual defervescence of enteric fever. He points out the character of the temperature curve in relapsing fever, and maintains generally that the higher the temperature the more serious the prognosis.

Further, it is on record that "Staff-Surgeon Remond[55] of the late Hanoverian Army, used thermometry in ascertaining the health of recruits, malingering, and in determining questions of service and transport."

About this time Goodhart,[56] who was evidently stimulated by Aitken and Wilks to study Wunderlich's work and then to make observations on his own account, says:—

> At the present time many look upon this instrument [the thermometer] as very interesting in the study of the natural history of disease, but as a thing of comparatively little value for the everyday work of medical practice. It may be that too much was expected and asked of it; that the estimation of temperature as an aid to diagnosis was such a rational idea that no adverse criticism was ever offered on the introduction of the thermometer, and that, at once, without proof or warrant, its advocates were allowed to claim for it a use in every possible disease. From this one extreme we have gone nearly to an opposite, and there are reasons for saying that now, in many instances, the temperature does not guide us as much as it might do, and that auscultation and thermometry do not go hand in hand as they would do had every member of our profession made trial for himself of the latter mode of investigation.

Charts are given of temperatures taken once a day, then twice a day, morning and evening, and of surface temperature above, below, and on an abscess swelling. Goodhart, in describing his experiments, writes:—

> The condition of the skin, whether dry or moist, has some influence on the ascent of the mercury; in the latter state the rise is usually slow, while with a dry and pungent surface, as in pneumonia, it is sudden. An apparent contradiction to this statement is sometimes observed in patients during the last stage of typhoid and other diseases, in whom, while sweating profusely, the temperature may rapidly rise to a great height.

He gives an interesting summary of his observations on temperature in disease, made during 12 months, on the influence of drugs over the progress of disease and on the practical points that he has observed in connexion with thermometry as an aid to diagnosis, prognosis, or treatment (p. 374).

INTRODUCTION OF IMPROVED CLINICAL THERMOMETERS.

Clinical thermometry, however, as already noted, became practicable and popular only after the introduction of the clinical thermometer in its present form. Clifford Allbutt,[57] reviewing Wunderlich's work in the *British and Foreign Medico-Chirurgical Review* for April and July, 1870, gives a brief account (op. cit., vol. xlv., p. 437) of his share in the introduction of the thermometer into general practice. He writes:—

> The first clinical thermometers made in this country were those of Casella, under the direction of Dr. Aitken. ..... They were, however, too cumbrous for general practice, and for this reason the thermometer long remained a stranger to the busy practitioner. A few years ago I applied to Casella, but he had no pocket thermometers and seemed indisposed to make them. I therefore set to work with Messrs. Harvey and Reynolds to manufacture one, and it was not so easy as it may seem to devise an accurate thermometer of a new form, and with a safe and portable case.

The sale of the instrument, at first slow, increased rapidly, and Hawksley and others soon began to make and sell it. All were graduated on the Fahrenheit scale, and a venture, made at Dr. Allbutt's suggestion, with thermometers having Centigrade scale "stopped the sale promptly," for Harvey and Reynolds "made an instrument having both scales upon it, but no one bought it," and he continues: "When I first designed pocket-thermometers I made them to fit within stethoscopes, but I did not like the results nor did others."

Dr. Willson[51] writes:—

> In 1864 I attended a number of cases of typhus. ..... My principal, Mr. Leonard, possessed a clinical thermometer, small and neat, non-registering, the index on an ivory plate, below which the bulb protruded about 1 in. for placing in the mouth or axilla. I used this instrument on several occasions.

In 1868 Potain[58] described a very convenient and portable form of thermometer which he had contrived, 11 or 12 cm. long and the thickness of a quill. It recorded quickly (two or three minutes) and was graduated to 0·1° C. with the scale marked on the glass. Coloured alcohol was the material used.

A writer in the *Medical Times and Gazette* in 1868[59] draws attention to Allbutt's "most excellent little self-registering thermometer ..... which is now being extensively used throughout the country," and cautioning those who use it not to expose it to a temperature of anything beyond 120° F. He mentions certain thermometrical observations made by Mr. Teale from which he concludes that—

> In many instances disease may be recognised by local changes in temperature, as, for instance, when it is suspected that a joint is inflamed, the comparison of its temperature with that of the healthy one on the other side may lead to a correct diagnosis.

In a letter dated Oct. 19th, 1869, L. P. Casella[60] states that Professor Phillips, of Oxford, exhibited for the first time at the Great Exhibition in 1851 a self-registering thermometer, the principle of registration "being by means of a speck of air extracted from the mercury of the bulb, and, after completion of the instrument, so placed as to detach any required length of mercury to be used as an index." It is a convenient form of portable registering thermometer, but received little notice at the time. He continues:—

> Dr. Aitken, of the Royal Victoria Hospital, Netley, was directing his attention to the influence of heat on the human frame. The sight of one of these thermometers was, I believe, the chief cause of my introduction to that gentleman, and through his kind coöperation "the self-registering clinical thermometer" was quickly and, I must say, most judiciously arranged, the length being about 10 inches, for the double purpose of having the degrees expanded and keeping the graduations a sufficient length from the bulb.

In 1869 a new clinical thermometer appeared. THE LANCET of July 3rd, 1869, p. 12, in a short note states:—

> A handy clinical thermometer has been devised by Mr. Hawksley, of Blenheim-street, late foreman to Mr. Baker, of Holborn. It is about the size of Dr. Allbutt's thermometer, and is graduated in fifths of a degree Fahr.

The wooden cases was marked with comparative scales of Fahrenheit and centigrade and also scales of inches and eighths of an inch.

Dr. B. Cornelius Fox,[61] in "Remarks on Clinical Thermometers" in 1869, described the various thermometers then in use, criticising their manufacture, in some cases very strongly. He noted the inaccuracies of readings of the thermometers supplied by different makers, even with those sold with Kew Observatory certificates, and he concludes by trusting "that the preceding remarks will tend to create an interest in the employment of the thermometer amongst those who have hitherto felt none, and will, moreover, intensify the interest of all who study such an exceedingly important subject as 'the thermometry of disease.'"

MEDICINE WITHOUT THE AID OF THE THERMOMETER.

From this time onwards clinical thermometry gained rapidly in usefulness and popularity, though Wilks,[62] in his "Biographical Reminiscences" (p. 143), commenting on Goodhart's paper on Thermometric Observations in Clinical Medicine,[56] says the instrument at that time had not come into general use, and, writing in 1903, he states that—

> In 1870 he "requested the Superintendent, at Guy's to procure a clinical thermometer. ..... I think it was *nearly a foot long* [the italics are ours] and was so great a novelty that it was taken to a South-Eastern meeting of the British Medical Association for exhibition, where the members regarded it with much curiosity and interest, although, I am sorry to say, one or two with ridicule." "It was at the service of anyone who might wish to make use of it."

He believes that the section in Dr. Aitken's "Practice of Medicine"[46] setting forth the value of thermometry in clinical investigation, in accordance with the researches of Wunderlich, was the first that appeared in any treatise of medicine published in this country, and caused the new method to be widely known; "at all events it was from the knowledge therein gained" that he (Wilks) was led to make the above request to the "Superintendent at Guy's." That clinical thermometry had made little headway in the United States up to 1865 is borne out by Garrison's[10] (p. 639) statement that "neither Keen nor Tyson saw a clinical thermometer or a hypodermic syringe during 1862–65. Billings, however, in taking care of the wounded from the seven days before Richmond (1862) had provided himself with both."

It is only when we come to realise that the physicians and surgeons of those days had to make their diagnoses, carry on their treatment, and form their prognoses without having at command what appears to us to be an almost essential instrument of precision, so necessary has its use become to the modern clinician, that our respect for these older physicians and surgeons and their power of diagnosis attains its full measure.

Bibliography (Part I.).—1. Martine (1740): Essays, Medical and Philosophical, London, 1740. A collection of six essays, four of which were reissued together as a second edition, Edinburgh, 1772, with the title "Essays and Observations on the Construction and Graduation of Thermometers and on the Heating and Cooling of Bodies." This went through a number of editions, the Cambridge University possessing a copy of the 4th ed., Edinburgh, 1787. This writer also published in 1740 "De similibus animalibus et animalium calore libri duo." Gamgee, following Wunderlich, ascribes a work of this date and with almost identical title to *Charles* Martin, but confesses "he has not been able to see a copy." 2. Cleghorn (1751): Observations on the Epidemical Diseases in Minorca; from the year 1744 to 1749, London. 3. Currie (1797): Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Fever and Febrile Diseases, Liverpool, 1797; 4th ed., London, 1805. 4. Arnott (1822): An Account of the Last Illness, Decease, and Post-mortem Appearances of Napoleon Bonaparte, London. 5. Wunderlich: Das Verhalten der Eigenwärme in Krankheiten, Leipzig, 1868. Transl. from 2nd German ed. of 1870, with additions, as vol. xlix. of the New Sydenham Soc. publications, London, 1871. Wunderlich published a paper on the Employment of the Thermometer at the Bedside in the Archiv für physiol. Heilkunde, N.F., i., 5–16, a full abstract of which appeared in the Med. Times and Gaz. for 1858, xvi., 639–41. He claims to have made in his clinique at least a million exact thermometrical observations and carefully compared the results in more than 5000 patients, he constantly employed the thermometer in private practice, and taught his pupils the use of the same. He has also summed up the principal conclusions under the accounts of the respective diseases in his celebrated "Handbuch der Pathologie und Therapie" (originally pub. at Stuttgart in 3 vols. in 4, 1846–54, and a 2nd ed., 4 vols, in 6, in 1852–6). Another article by him was published in Archiv d. Heilkunde, I., 1860, 386, and translated in full abstract in Med. Times and Gaz. for 1861, ii., 326, 385. Amongst other articles published by him were: Die Thermometrie bei Kranken, Archiv f. physiol. Heilkunde, Stuttgart, 1857. Ueber den normal. Verlauf einiger typischen Krankheitaformen, ibid., 1858. Vorträge ü. Krankenthermometrie in Archiv der Heilkunde, Leipzig, vi.-viii., 1865–7. The 1st ed. of his separate work was published in 1868 and a 2nd ed. in 1870. 6. Sanctorius: Commentaria in primam fen primi libris canonis Avicennae, Venetiis, 1625 (cited by Garrison) and again 1646; Commentaria in Artem medicinalem Galeni, Venetiis, 1612 and Lugd., 1632 (consulted in the Library of the Roy. Soc. Med.); De statica medicina, Venetiis, 1614 (cited by Gamgee) and numerous later editions. 7. Boerhaave (1709): Aphorismi de cognoscendis et curandis morbis in usum doctrinae domesticae, Lugd. Bat.; an English translation was published in 1715. 8. Van Swieten: Commentaria in Hermanni Boerhaave Aphorismos de cognoscendis et curandis morbis, 6 vols., Lugd. Bat., 1742–75. See tom. secundus, 1745, p. 287. Translated into English 1744–54. 9. de Haen: Ratio medendi in nosocomio practico, 15 vols., Vindobonae, 1758–69; also 7 vols., Vindobonae, 1757–70; and 11 vols., Parisiis, 1761–78. Gamgee quotes the edition publ. Lugd. Bat., 1761, and adds "vide De supputando calore corporis humani, i., cap. xix., 118." Ratio medendi in nosocomio practico Vindobonensi, 8 vols., Venetiis, 1785. 10. Garrison (1913): History of Medicine, Philadel. and London, 287. 11. Macard (1741): De generatione caloris et usu in corpore humano, Dissert, Gottingae. 12. Pickel (1778): Experimenta physico-medica de electricitate et calore animali, Würzburg. 13. Blagden (1775): Experiments and Observations in an Heated Room, Phil. Trans. Roy. Soc., London, vol. lxv., 111, 484. 14. Hunter: Experiments on Animals and Vegetables with Respect to the Power of Producing Heat, Phil. Trans., London, for 1775, vol. lxv., p. 446; Of the Heat, &c., of Animals and Vegetables, ibid., 1778, London, 1779, lxviii., 7; A Treatise on the Blood Inflammation and Gunshot Wounds, London, 1794, reprinted in Works of John Hunter, Palmer's ed., 1837, London, iii., 1–580; also Observations on Certain Parts of the Animal Œconomy, London, 1837, 131. 15. Lavoisier and Laplace: Sur la Chaleur in Hist. Acad. Roy. d. Sc., 1780, Paris, 1784, pp. 355–408. 16. Mitchell (1892): The Early History of Instrumental Precision in Medicine, New Haven. Also in Trans. Ass. Amer. Phys., 1892. [This is apparently an incorrect reference, and we shall be glad of any help in the matter.] Bolton (1900), Evolution of the Thermometer, 1592–1743, Easton, Pa., should also be consulted. 17. North (1811): A Treatise on a Malignant Epidemic, Commonly Called Spotted Fever; Interspersed with Remarks on the Nature of Fever in General, &c., New York. 18. Brodie: On some Physiological Researches Respecting the Influence of the Brain on the Action of the Heart and on the Generation of Animal Heat (Croonian Lecture for 1810), Philos. Trans., London, 1811, pp. 36, 207; Further Experiments and Observations, 1812, p. 378. These two papers, together with an earlier one, Account of the Dissection of a Human Fœtus in which the Circulation of the Blood was Carried on Without a Heart (Philos. Trans., London, 1809, pp. 161–8), are translated by D. Nasse in Reil and Autenrieth's Arch. f. d. Physiol., Halle, 1815, xii., and followed by an article by himself, Bemerk. z. Brodie's Versuchen ü. d. thierische Wärme, op. cit., p. 404, pronouncing strongly in favour of Brodie's theory. Further Exper. and Observations on the Influence of the Brain on the Generation of Animal Heat, New Med. and Phys. Journ., London, 1813, v., 129. Pathol. and Surg. Observations Relating to Injuries of the Spinal Cord, Med.-Chir. Trans., London, 1837, xx., 147. Physiological Researches, collected and republished from the Phil. Trans., London, 1851. 19. Dalton (1813): Mem. Lit. and Phil. Soc. of Manchester (2), ii., p. 43. 20 Davy: An Account of Some Experiments on Animal Heat, Philos. Trans., London, 1814, p. 590. He republished his earlier statements in Researches Physiol. and Anat., 2 vols., London, 1839. 21. Gentil (1815): Sur la Chaleur Animale, Dissert., Paris. 22. Thomson (1813): On the Heat Evolved during Inflammation of the Human Body, Annals of Philos., London, ii., 26, translated in Deutsches Archiv f. d. Physiol., Halle, 1817, iii., 465. 23. Home: On the Influence of Nerves and Ganglions in Producing Animal Heat, Philos. Trans., London, 1825, p. 257; 1826, p. 60. See also An Account of Some Experiments on Animal Heat in his Researches Phys. and Anat., London, 1839, i., 141. 24. Becquerel and Breschet (1835): Ann. d. Sci. Nat., Paris, 2 sér., Zoologie, iii., iv., ix., &c. 25. Berger: Mem. d. l. Soc. de Phys. et Hist. Nat. de Genève, vi., Pt. 2, 257, and 1836, vii., 1. 26. Bouillaud (1837): Clin. Méd. de l'Hôpital de la Charité, Paris, 1837, i., 294; iii., 428. 27. Donné (1836): Arch. Gén. de Méd., Paris, 2 sér., ix., 129. 28. Piorry (1838): Traité de Diagnostic et de Séméiologie, Paris, iii., 28. 29. Wistinghausen (1837): De calore animali quaedam, Dissert. Dorpat. 30. Nasse, C. F. and H.: Untersuchungen ü. Physiologie u. Pathologie, 2 vols., Bonn, 1835–9, vol. ii. (?1839), 115 (C.F.N.) and 190 (H.N.). Nasse, D. (1815): Bemerk. z. Brodie's Versuchen ü. d. thierische Wärme, Reil and Autenrieth's Arch. f. d. Physiol., Halle, xii., 404. Nasse, F. (1848): Fragen ü. d. Quelle der in den lebenden Körpern erzeugten Wärme, Rhein. Monatschr. f. prakt. Aerzte, Köln, ii., 450. Die krankhafte Wärme-Erzeugung im menschl. Körper, ibid., 1849, iii., 133. Nasse, G. (1849): Die thierische Wärme, in Handwörterb. d. Physiol., Brnschwg., 1849–53, iv., 1–106. Nasse, W. (1843): Versuche ü. d. Antheil des Herzens an der Wärme-Erzeugung, Med. Cor. Bl. Rhein. u. Westfal. Aerzte, Bonn, ii., 215. 31. Willson (1903): Brit. Med. Jour., London, i., 1181. 32. Lloyd Jones (1903): Ibid. 33. Chaplin (1913): The Illness and Death of Napoleon Bonaparte, London. 34. Arnold (1840): A Practical Treatise on the Bilious Remittent Fever; its Causes and Effects, London. 35. Andral (1841): Lectures on General Pathology (cited by Wunderlich). 36. Gierse (1842): Quaenam sit ratio caloris organici partium inflammatione laborantium, Dissert., Halle. 37. Hallmann (1844): Ueber eine zweckmässige Behandlung des Typhus, Berlin. 38. Roger (1844): De la Température chez les Enfants à l'État Physiologique et Pathologique, Paris; reprinted from Arch. Gén. de Méd., Paris, 1844, &c., sér. 4, v.–ix. 39. Demarquay: Recherches Expérimentales sur la Température Animale, Paris, 1847. See also Duméril and Demarquay, Recherches Expérim. s. l. Modifications Imprimées à la Température Animale, Paris, 1848, and Duméril, Demarquay and Lecomte, Rech. Expér. s. l. Modifications Imprimées à la Temp. Animale par l'Introduction dans l'Économie, de Différents Agents Thérapeutiques (abstr.), Compt. Rend. Acad. d. Sc., Paris, 1851, xxxii., 463, 541, 801, 902; xxxiii., 409. 40. Zimmermann: Med. Zeit. d. Ver. f. Heilkunde in Preussen, 1846, 1847, 1852; Archiv f. physiol. Heilkunde, 1847, 1850, and in his own and other journals; Ueber die Analyse des Blutes, Berlin, 1847; Klin. Unters. ü. Fieber-, Entzündungs- und Krisen-Lehre, 1854. 41. Davy: Miscell. Obs. on Animal Heat, Phil. Trans., London, 1844, p. 57; On the Temperature of Man, ibid., 1845, p. 319; On the Temperature of Man within the Tropics, ibid., 1850, p. 437; republished in his Physiological Researches, London, 1863. 42. Bärensprung (1851): Unters. ü. d. Temperatur-Verhältnisse des Fötus, und des erwachsenen Menschen im gesund. u. kranken Zustande (Müller's Archiv, Berlin, 1851, p. 126; 1852, p. 217. 43. Traube (1850): Annalen der Charité Krankenhäuser ..... zu Berlin, Bd. i. (1850); also ibid., 1851. 43a. Liebermeister: Die Regulirung der Wärmebildung bei Thieren von constanter Temperatur, Deutsche Klinik, Berlin, 1859, No. 40; Physiol. Unters. ü. d. quantit. Veränd. d. Wärmeproduction, Reichert's Archiv, Leipzig, 1860, 520, 589, and 1861, 28; Handb. d. Path. u. Therapie des Fiebers, Leipzig, 1875. 44. Livingstone (1857): Missionary Travels and Researches in South Africa, London. 45. Brydon (1903): Brit. Med. Jour., London, i., 1181. 46. Aitken (1863): The Science and Practice of Medicine, second ed., London, 1863, i., 40, and this section entirely re-written and enlarged in third ed., 1864, i., 32–63. 47. Gibson (1866): On the Use of the Thermometer as a Guide in the Diagnosis of Pyrexial Diseases, Brit. Med. Jour., London, i., 249, 278. 48. Ogle (1866): On the Diurnal Variations in the Temperature of the Human Body in Health, St. George's Hosp. Rep., London, i., 221. 49. Pavy (1866): Med. Times and Gaz., London, i., 659. 50. Ringer and Rickards (1866): Ibid., i., 250. See also Ringer: On the Temperature of the Body as a Means of Diagnosis in Phthisis and Tuberculosis, London, 1865. 51. Warter (1866): St. Bart.'s Hosp. Reports, London, ii., 64. 52. Chapman (1895): Cholera Curable: a Demonstration of the Causes, Non-contagiousness and Successful Treatment of the Disease, London. 53. Hollis (1867): St. Bart.'s Hosp. Reports, London, iii. 285. 54. Fox (1870): Med. Times and Gaz., London, 1870, i., ii. 55. Remond (1868): Zeitschr. f. gerichtl. Med. (cited in Med. Times and Gaz., i., 238). 56. Goodhart (1870): Thermometric Observations in Clinical Medicine, Guy's Hosp. Rep., London, 3 ser., xv., 365. 57. Allbutt (1870): Medical Thermometry, Brit. and For. Med.-Chi. Rev., London, xlv., 429, xlvi., 144. 58. Potain (1868): Union Méd., Paris, Feb. 11th, 1868; see extract in Med. Times and Gaz., London, 1868, i., 238. 59. Med. Times and Gaz. (1868), London, i., 341. 60. Casella (1869): Clin. Thermometers; letter in Med. Times and Gaz., London, ii., 611. 61. Fox (1869): Remarks on Clinical Thermometers, Med. Times and Gaz., London, ii., 459–61; also (abstr.) THE LANCET, London, ii., 180, and Brit. Med. Jour., London, ii., 247. 62. Wilks (1911): Biographical Reminiscences of Sir Samuel Wilks, London.

(To be continued.)

THE DR. DAUBER MEMORIAL NURSES' PRIZE FUND.—As we have previously announced, it has been thought desirable to raise a Memorial Fund to perpetuate the memory of Lieutenant-Colonel J. H. Dauber, R.A.M.C., an obituary notice of whom appeared in our columns on Sept. 25th, 1915. He was in command of the East Anglian Clearing Hospital, but lost his life in the sinking of the transport ship *Royal Edward* on the way to the Dardanelles in August last. Almost one of the last things that Dr. Dauber did, revealing his public spirit, was to write an important letter to *The Times* of July 9th, 1915, calling attention to the dissipation of strength by municipal and public bodies in expenditure on local undertakings not necessary to our military success, which he maintained should be our one thought, aim, and hope. The sentiment is to-day more than ever true. Dr. Dauber was for many years lecturer to the nursing staff at the Soho Hospital for Women, and the training of the nurses on the theoretical side of their work was entrusted entirely to him. It has been decided to institute a fund to be called "The Dr. Dauber Memorial Nurses' Prize Fund," the income to be applied yearly in distributing prizes to the members of the nursing staff of that hospital. It is hoped to raise a sum of about £250. Donations should be sent to the secretary, Mr. Alfred Hayward, Hospital for Women, Soho-square, London, W.

ON THE BACTERICIDAL POWER ACQUIRED BY THE SERUM AFTER THE ADMINISTRATION OF SALVARSAN OR NEOSALVARSAN.

BY S. R. DOUGLAS, M.R.C.S., L.R.C.P. LOND.,
CAPTAIN I.M.S. (RETIRED); FIRST ASSISTANT, BACTERIOLOGICAL DEPARTMENT, MEDICAL RESEARCH COMMITTEE, NATIONAL INSURANCE ACT;
AND
L. COLEBROOK, M.B., B.S. LOND.,
CAPTAIN, R.A.M.C. (T.)
(*From the Inoculation Department, St. Mary's Hospital, London*).

SHORTLY after the introduction of salvarsan as a curative agent for syphilis it was noticed that lesions secondarily infected with pyogenic cocci yielded to the treatment almost as promptly as those in which such secondary infections were absent. Investigations carried out in this laboratory showed that such recoveries were not associated with any increase of the antibacterial powers of the patient's blood fluids, as measured by the opsonic index. Taking these facts into consideration, together with the well-known antiseptic qualities of many arsenic compounds, it was suggested by Sir Almroth Wright that it would be of interest to ascertain if the serum acquired a bactericidal action after the administration of salvarsan or neosalvarsan.

Shortly before the preliminary experiments were made by one of us (S. R. D.) to demonstrate this bactericidal power, Wright had completed some researches on a quinine derivative,[1] now known as optochin, which had been shown by Morgenroth to be capable, when introduced into the blood, of killing off pneumococci in infected mice. Wright by means of these experiments, which were carried out *in vitro*, was able to demonstrate that optochin was apparently just as active in its bactericidal power against the pneumococcus when in solution in serum or blood as when dissolved in water or saline solution, and that it was, in this respect, unlike other chemical bactericidal agents.

Ehrlich had already enunciated the theory that the curative power of salvarsan and neosalvarsan in regard to diseases caused by spirochætes was due to these drugs having either a greater affinity for the spirochætes than for the tissues or the blood, that is, in the technical phraseology, it was more parasitotropic than histo- or sero-tropic, or, even if the drug did enter into combination with the blood or tissues, this combination was so loose that in the presence of the parasite dissociation took place, thus allowing the drug freedom to act on the parasites.

These experiments of Wright's suggest that such theories were applicable to the whole range of chemo-, or as he prefers to call it, pharmacotherapy. It was therefore decided before further investigating the bactericidal action of patients' serum after the administration of the drug to ascertain by a series of similar experiments whether salvarsan and neosalvarsan were more bacteriotropic than sero- or hæmocyto-tropic.

In Vitro Experiments.

The methods used in these investigations were as follows:—Dealing in the first place with neosalvarsan a 1 in 300 watery solution was made. To test the bactericidal power of the various mixtures made with this "stock" solution of neosalvarsan a 24-hour-old broth culture of staphylococcus was used.

Preference was given to the staphylococcus over other organisms in this and in many of the following experiments, firstly, because of the ease with which young broth cultures can be accurately diluted; secondly, because serum has little or no bactericidal action against it even in highly immunised individuals; and, thirdly, this organism having a very considerable resistance to most antiseptics, if positive bactericidal results were obtained, it might be safely assumed that very many other organisms would be similarly affected.

The reservoir of a Wright's bactericidal pipette[2] having been filled in with broth, a mixture made of 1 volume of the solution to be tested and 1 volume of the dilution of the staphylococcus culture was drawn up into the capillary portion. After incubating the tubes overnight at 37° C. the contents of the capillary portion were drawn up into the broth contained in the reservoir. Further incubation at 37° C. indicated by the presence or absence of growth whether the various solutions containing the neosalvarsan had killed off the staphylococci or not.

The various mixtures containing neosalvarsan which were tested for their bactericidal power were: I. The 1 in 300 solution of neosalvarsan diluted ten-fold with salt solution. II. This same solution diluted ten-fold with serum. III. This same solution diluted ten-fold with blood. The blood was then allowed to clot, and the serum which exuded from the clot was the fluid tested. The results obtained are set forth below in tabular form (Table I.):—

TABLE I.

Dilution of the broth culture of staphylococcus which contained 360,000,000 cocci per c.c.	I. 1 in 300 solution of neosalvarsan diluted ten-fold with salt solution.	II. 1 in 300 solution of neosalvarsan diluted ten-fold with serum.	III. 1 in 300 solution of neosalvarsan diluted ten-fold with blood.
1 in 1,000,000	Sterile.	Sterile.	Sterile.
1 in 100,000	,,	,,	,,
1 in 10,000	,,	,,	,,
1 in 1,000	,,	Growth.	,,
1 in 100	,,	,,	Growth.
1 in 10	Growth.	,,	,,

This experiment shows that the 1 in 300 solution of neosalvarsan, diluted with normal saline solution, was considerably more actively bactericidal than when the same 1 in 300 solution was diluted with an equivalent amount of serum or blood. It further indicates that the serum has a greater effect in inhibiting the bactericidal power than is possessed by the blood, which suggests the fluid constituents of the blood being the binding agents rather than the corpuscles.

This same experiment was then carried out with fluids containing salvarsan. A 1 in 300 solution of salvarsan was made and carefully neutralised with sodium hydrate. From this solution the following mixtures were made: I. The 1 in 300 solution of salvarsan diluted ten-fold with normal saline solution. II. The same solution diluted ten-fold with serum. III. The same solution diluted twenty-fold with blood, which was then allowed to clot. The serum thus obtained was used for the test.

It is to be noticed that mixture No. III. was made by adding 1 volume of salvarsan solution to 19 of

[1] Drugs and Vaccines in Pneumonia, by Wright. London: Constable. 1914.

[2] Technique of the Teat and Capillary Glass Tube, by Wright. London: Constable. 1912.

blood, instead of, as in the case of the test applied to the neosalvarsan, making a 1 in 10 dilution with blood. This was done in view of the fact that the corpuscles represent about half the volume of the blood. Again the bactericidal power was tested against a culture of staphylococcus. The bactericidal tubes were incubated for one hour at 37° C. after the mixture of culture dilution and the fluid containing the salvarsan had been introduced into the capillary portion instead of, as in the case of the experiment carried out with neosalvarsan, being left overnight. The results obtained with these mixtures of salvarsan are given in tabular form. (Table II.)

TABLE II.

Dilution of the broth culture of staphylococcus which contained 410,000,000 cocci per c.c.	I. 1 in 300 solution of salvarsan diluted ten-fold with salt solution.	II. 1 in 300 solution of salvarsan diluted ten-fold with serum.	III. 1 in 300 solution of salvarsan diluted twenty-fold with blood.
1 in 1,000,000	Sterile.	Sterile.	Sterile.
1 in 100,000	,,	,,	,,
1 in 10,000	,,	,,	Growth.
1 in 1,000	,,	,,	,,
1 in 100	,,	Growth.	,,
1 in 10	Growth.	,,	,,

This experiment gives almost identical results as those obtained with neosalvarsan.

In Vivo Experiments.

These investigations were made with the sera of patients who were suffering from various manifestations of syphilis and to whom ordinary doses of salvarsan or neosalvarsan—that is 0·6 grm. of the former or the equivalent of the latter—had been administered in the course of their treatment. Neosalvarsan was used in eight of the cases, and it was found that in seven of these the serum developed a distinct bactericidal power against staphylococcus. In one case the bactericidal power was also tested against a coli-form organism with the result that it was found to be equally as well marked as against the staphylococcus. In the one case in which no bactericidal power could be found the test was carried out against a very thick culture of B. pyocyaneus and only one sample of blood was obtained after the administration of the drug. The details of two of these experiments are given below.

Experiment 1.—The method employed for the demonstration of the bactericidal power was similar to that used in the *in vitro* experiments. The organism used to demonstrate this power was staphylococcus, a 24-hour broth culture containing 150 millions living organisms per c.c. Four samples of blood were obtained: The first, immediately before the injection of the neosalvarsan; the second, one hour after the injection; the third, two hours after the injection; the fourth, three hours after the injection. The results obtained are shown in Table III.

TABLE III.

Dilution of culture of staphylococcus, which contained 150,000,000 cocci per c.c.	Serum from blood before injection.	Serum from blood 1 hour after injection.	Serum from blood 2 hours after injection.	Serum from blood 3 hours after injection.
1 in 1,000,000	Sterile.	Sterile.	Sterile.	Sterile.
1 in 100,000	Growth.	,,	,,	,,
1 in 10,000	,,	,,	,,	,,
1 in 1,000	,,	,,	,,	Growth.

It will be seen that in this experiment 5 c.mm. of serum (that being the quantity of serum used in each tube) was capable of killing off at least 750 staphylococci one hour after the injection had been given, whereas the serum before the injection had no bactericidal power whatever.

Experiment 2.—Broth culture of staphylococcus 24 hours old containing 245 millions living organisms per c.c. Four samples of blood obtained: The first immediately before the injection of neosalvarsan; the second one hour after the injection; the third two hours after the injection; the fourth three hours after the injection. The results are given in Table IV.

TABLE IV.

Dilution of the culture of staphylococcus, which contained 245,000,000 cocci per c.c.	Serum from blood taken before injection.	Serum from blood taken 1 hour after injection.	Serum from blood taken 2 hours after injection.	Serum from blood taken 3 hours after injection.
1 in 1,000,000	Sterile.	Sterile.	Sterile.	Sterile.
1 in 100,000	Growth.	,,	,,	,,
1 in 10,000	,,	,,	Growth.	Growth.
1 in 1,000	,,	Growth.	,,	,,
1 in 100	,,	,,	,,	,,

In this experiment 5 c.mm. of the serum obtained one hour after the injection was able to kill at least 122 staphylococci, whereas this quantity of serum before the injection could at the most have killed but one organism.

It will be noticed that while both these experiments show that the serum has developed a very considerable bactericidal power, it is evidently but of short duration, for even after as short a period as two hours it has sometimes passed its maximum. Wishing to make certain that the bactericidal power which was almost uniformly found to have developed in the serum was in no way connected with immune bodies, the serum of certain of the cases was again tested after having been heated to 60° C. for about ten minutes, a proceeding which would have rendered inert any such immune bodies contained in it.

The results of one of these experiments given in Table V. show that such a temperature was without any detrimental effect, so that it is certain that the lethal action of the serum was in no way connected with immune bodies.

TABLE V.

Dilution of staphylococcus culture containing 490,000,000 cocci per c.c.	Serum from blood taken before injection.	Serum from blood taken 1 hour after injection.	Same serum heated to 60° C. for 10 minutes.	Serum from blood taken 2 hours after injection.	Same serum heated to 60° C. for 10 minutes.
1 in 1,000,000	Growth.	Sterile.	Sterile.	Sterile.	Sterile.
1 in 100,000	,,	,,	,,	,,	,,
1 in 10,000	,,	,,	,,	Growth.	,,
1 in 1000	,,	,,	,,	,,	Growth.
1 in 100	,,	Growth.	Growth.	,,	,,
1 in 10	,,	,,	,,	,,	,,

In this experiment 5 c.mm. of serum obtained one hour after the injection was able to kill 2450 staphylococci.

Passing now to review the results obtained after the administration of salvarsan, it is seen that, contrary to what was expected from the results of the experiments carried out *in vitro*, after the administration of this preparation, but little bactericidal power was found in the serum. Thus, out of

eight cases in which the serum was tested at various intervals of from ten minutes to three hours after the administration of the drug four were found to have developed no recognisable increase of bactericidal power. Three of these were tested against cultures of staphylococcus, the other against the pneumococcus; one of those tested against the staphylococcus was also tested against the pneumococcus with a similar result. Of the other cases three showed a slightly increased bactericidal power, in one case against the staphylococcus, in another against the pneumococcus, and in the third against staphylococcus and streptococcus. The remaining case showed a similar slight increase of bactericidal power against a culture of streptococcus, but none at all against either staphylococcus or pneumococcus.

It was noticed, however, in all these experiments, and especially in those in which staphylococcus cultures were used, that the samples of serum obtained after the injection of the salvarsan showed a marked power of inhibiting the growth of the organisms. This was evidenced by the slowness of growth—two or even three days elapsing before it could be definitely ascertained if growth was present or absent; and also in those tubes where growth occurred the organisms were agglutinated into masses, so that instead of an even turbidity of the broth a small mass of organisms occurred in the bottom part of the reservoir.

In view of the fact that the patients' serum in our experiments always showed a higher bactericidal power after the injection of neosalvarsan than of salvarsan, it is of interest to note that Swift and Ellis,[3] working with Spirochæta duttoni, were able to show a similar difference in respect of spirochæticidal power. Further, they showed that patients' serum, after administration of these drugs, acquired a spirochæticidal power for only a few hours, reaching its maximum within the first hour after the injection; and that this spirochæticidal power was somewhat increased, rather than diminished, by heating the serum to 60° C. (*cf.* Table V. above).

Summary and Conclusions.

1. Neosalvarsan and salvarsan in watery solutions possess a very distinct bactericidal power against staphylococcus when the strength of the solution is 1 in 6000. When the solvent largely consists of blood or serum this power is slightly diminished. The bactericidal power of solutions of both these preparations appears to be practically the same.

2. The administration of neosalvarsan in ordinary doses renders the blood fluids markedly bactericidal. This power lasts but a short time, and seems to reach its maximum about one hour after the administration of the drug, diminishing rapidly in the third and fourth hours.

3. Heating the serum to 60° C. for from 10 to 20 minutes has no deleterious effect on this bactericidal power, showing that it is not in any way due to the development of immune bodies in the serum, and this fact, together with the short period in which the serum is found to be bactericidal, strongly suggests that the bactericidal power is due to some arsenic compound in solution in the blood serum.

4. Salvarsan which, as mentioned above, has almost identically the same bactericidal power as neosalvarsan in *in vitro* experiments, gave practically no demonstrable bactericidal power to the patient's serum when ordinary therapeutic doses were administered, but it was constantly noticed that organisms which had been treated with serum obtained within three hours of the administration of the drug grew very much more slowly than normally and were agglutinated into masses.

5. In view of the very distinct bactericidal power which the serum acquires after the administration of neosalvarsan, it is reasonable to hope that the administration of this drug, or some similar preparation such as neokharsivan, would have a beneficial effect on wound or other similar septicæmias, and might even strikingly assist in the sterilisation of deep and irregular suppurating wounds.

[3] Journal of Experimental Medicine, Oct. 1st, 1913.

A CONTRIBUTION TO THE BIOLOGY OF THE VERMIFORM APPENDIX.

BY W. COLIN MACKENZIE, M.D. MELB., F.R.S. (EDIN.)

A STUDY of the fauna of Australia offers a unique opportunity in aiding the solution of many important biological questions, and especially those pertaining to the gastro-intestine. The two monotremes and the various marsupials represent the selected results of a struggle with forces that have been operating through many ages. As the survival results among the marsupials are in many ways so diverse we have a distinct advantage in being able to institute comparisons among animals limited to the same order. Furthermore, during the last century these animals—lowest on the mammalian scale—were suddenly brought into contact with modern man. We are unfortunately now witnessing final phases in the struggle and their biological significances. Amongst the marsupials we have on one side the koala, a purely eucalyptus-leaf feeder with a cæcum which may reach the great length of 244 cm., and on the other the Tasmanian devil (Dasyurus ursinus), purely carnivorus, which has evolved a simple intestinal tube swung on a single mesentery, with no differentiation except microscopically between the large and small gut. Both these are rapidly becoming extinct—the former in spite of a rigid protection. Between these varieties we have the opossum (Trichosurus), more adaptable as regards diet than the koala, and hence still numerous in different parts of the continent, and the allied varieties of the Macropodidæ—viz., wallaby, the selected and more adaptable variety whose cæcum may resemble that of the human fœtus and be only 5 cm. long, and the kangaroo whose cæcum—much more capacious—varies from 30 to 40 cm. In addition we have Phascolomys (wombat), the selected marsupial, living on a nutritious diet of vegetable matter, whose abdominal contents resemble those of man and who shares with him and the higher anthropoids the possession of a true vermiform appendix. To those I propose to add the Echidna.

What is meant by Vermiform Appendix.

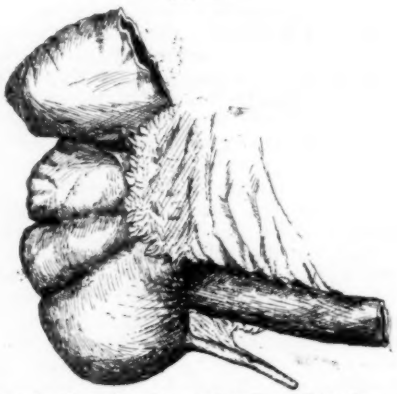
The appendices of these four types apart from size are difficult to differentiate, and subscribe to what Charles Bell and Owen refer to in the definition of the vermiform appendix as a small gut—appended to the cæcum and differentiated externally by a marked commencement and internally by a valvular structure—but bearing no relation in size or figure to any part of the intestinal canal, which, from its smallness and twisted appearance like the writhing of an earthworm, has received the name of

"vermiform." As Stapley and Lewis in their important paper[1] write: "It did not occur to Owen on account of the presence of this massed lymphoid tissue to name the end of the rabbit's cæcum 'vermiform.' He did not regard the rabbit as showing that rare form which he thought of under the name 'vermiform appendix.'" The rabbit has a highly specialised intestine, since apart from the sacculus rotundus there are no less than six distinct areas in the great intestine, making it unfit for comparison. Nor did Owen include Lemuroidea, as in his description of the aye-aye he is careful to point out; nor did he refer to the appendicular ends of cæca such as one often sees in the phyllophagous koala and opossum, where I have never yet found a single lymphoid follicle.

The Validity of Einar Lönnberg's View.

In 1902 Dr. Lönnberg advanced the opinion[2] that if the wombat's appendix were a true vermiform appendage—i.e., the reduced blind end of a cæcum—it ought to have opened into the cæcum of which it was a part; as it does not, but opens with a quite independent opening of its own near that of the ileum, he judges that the so-called processus vermiformis of the wombat represents a rudiment of the whole cæcum, since it acquires a similar situation, opening into the colon in relation with the ileo-cæcal valve. A new cæcum becomes formed behind

FIG. 1.



Ileo-cæcal region. Phascolomys mitchelli. (All the figures are half natural size.)

the cæcum, the result of a bulge of the colon owing to food alterations—viz., reversion to a more bulky diet. Apparently Lönnberg's material was limited, as he tells us when discussing the colic sacculi he had worked on two animals, and further, his description might equally apply to the fourth variety of the human cæcum in which, according to Deaver, the internal sacculus has disappeared entirely and the base of the appendix is attached to the cæcum posterior to the receding angle between the ileum and the cæcum, the opening being sometimes in relation with the ileo-cæcal valve. Furthermore, we have no evidence that food alterations presumably recent have occurred. A reference to Figs. 1 and 2, in which the lumen of the appendix is patent, indicates the rotation taking place, and shows the base of the appendix corresponding to the true apex of the cæcum. In Fig. 3, where the internal opening which was not within the lips of the ileo-cæcal valve has closed and the appendix is adherent to the ileum, not only has the left sacculus disappeared, but the right has atrophied almost up to the level of the ileum. The average human cæcum, i.e., one approaching the fourth type, has a depth of about 6 cm., and in the case of a young orang-utang in the Hunterian Museum the depth of the cæcum is 2·5 cm. and the width 4·5 cm. It approaches the fourth type—the termination of the ileum running obliquely through the intestinal wall being in

FIG. 2.

Ileo-cæcal region. Phascolomys mitchelli.

juxtaposition to the appendicular orifice. An examination of a series of 12 Victorian wombats showed that the cæcal depth varied from 1 to 1·5 cm. In two cases it was only 0·5 cm. and in one case was actually on the ileal level. In a latifrons with a well-defined lumen, mesentery, and appendix the pouch was 3 cm. deep, and in another (mitchelli) with the appendix obviously the apex of the cæcum the depth equalled 4 cm. and the width 5 cm. The lumen of the appendicular canal was incomplete in 64 per cent. of specimens. After the twentieth year 32 per cent. of human appendices are obliterated. The approximation of the base of the appendix towards the ileo-cæcal valve is quite in accordance with the evolutionary trend of that organ. Lönnberg believes such a movement took place. Yet he would not admit of the classification of the wombat with man and the ape, because

FIG. 3.

Ileo-cæcal region. Phascolomys mitchelli.

he believes a new cæcum has been formed, the result of supposed diet alteration. To favour that view from the examination of a large number of specimens I have failed to find evidence that, apart from the formation of a new cæcum, even the right external sacculus has enlarged. On the contrary, there is abundant evidence of atrophy. (Figs. 3 and 4.) Owen's generalisation,[3] that "the cæcum in the wombat is extremely short but wide; it is

[1] Morphology of the Vermiform Appendix. Walter Stapley and J. C. Lewis. Proc. Royal Soc. Vict., vol. xxiii.

[2] Adaptations in Diprotodont Marsupials, Dr. Einar Lönnberg. Proc. Zool. Soc., London, 1902, vol. i.

[3] Comparative Anatomy of the Vertebrates, vol. iii.

remarkable for being provided with a vermiform appendage," must still be accepted.

Types of Human Cæcum.

The classical description of Sir Frederick Treves[4] still forms the basis of our comparison. He recognised four types: (*a*) Infantile, with muscle bands equi-distant; (*b*) cæcum more quadrilateral, appendix appearing between two bulging sacculi; (*c*) apex turned to the left and posterior—the base of the appendix is brought nearer the ileo-cæcal valve, a false apex formed by the highly developed part to the right; (*d*) sacculus to the right relatively large, while that to the left has disappeared—the root of the appendix appears to spring almost from the ileo-cæcal junction. No anatomist has ever suggested that the relatively large size of the right sacculus was the result of some reversion to a more bulky diet. These four variations become intelligible—not mere statements of facts—if we recognise that each represents a coördinated sequence of the other; each is part of a coördinate scheme in the evolution of the appendix, and no one variation can be regarded as the type.

Mode of Disappearance of Structures.

It is interesting to note that the oldest known wombat's appendix, once the property of Sir Everard Home, is in the Hunterian Museum, and that John Hunter was known to be engaged on the marsupials just before his death. His work on absorbents shows that the question of disappearance of organs interested him. "It may be difficult at first," he writes, "to conceive how a part of the body can be removed by itself, but it is just as difficult to conceive how a part can grow or add to itself, which we see daily taking place. These are both certain facts. A part which was necessary in one stage of life, but which becomes entirely useless in another, is removed. It is evident in many animals the thymus gland is removed." It is clear that a knowledge of the mode of disappearance of normal structure should help us in the investigation of the abnormal. Amongst the marsupials we notice the disappearance of the thoracic thymus in the wombat, but its good development in the Dasyurus ursinus; the closure of the inguinal canal in the male sex of the latter though open in that of the former as well as in koala and the kangaroo; the incorporation of the fibula into the tibia as seen in the Macropodidæ; the small relative size of the adrenals in the phyllophagous koala and Trichosurus and the approach of the right along the vena cava to the liver. In the case of the opossum (Trichosurus) it may be found approximate to the liver under the capsule or be completely absent. In the female the Müllerian ducts, though differentiated into duct, uterus, and vagina, nevertheless open separately into the urino-genital sinus. Yet from the upper part of the vagina on each side we have given off—beginning as a bend—the median vaginal cæcum which approximates so closely to that of the opposite side that fusion takes place—the two walls forming only an intermediate septum. This breaks down so that one central vaginal cæcum or median vagina is formed, which, increasing in size, reaches the urino-genital sinus to serve for the transmission of the fœtus and remains the vagina of higher types.[5] Thus we see formation and atrophy going on in the one order and the triple vagina of the marsupial becomes intelligible when we realise that the design is unification—the lateral vaginæ finally disappearing.

Similarly by a study of the vermiform appendix in the wombat nature offers us the clue to the mode of disappearance of that structure in man since we can trace it from the fourth human type to complete disappearance (Fig. 4). It may be found as in Phascolomys latifrons quite independent of the ileum with a well-defined mesentery, or the mesentery may be only partial and the base be in relation with the termination of the ileum or the mesentery be altogether absent. As shown in Fig. 3, the appendix finally becomes incorporated into the wall of the ileum and the various grades are seen till in one specimen no appendix is present—the only structure being a firm knob on a shred of mesentery. In none of these specimens was there evidence of any inflammation. Thus a complete coördinated sequence from the fœtal or infantile type of cæcum to one showing complete disappearance of the appendix is clearly demonstrated. In the wombat about the ileo-cæcal region a puckering is noted, producing sacculi and depression. This is of interest when we consider that close together about the root of the mesentery we have duodenum, duodeno-jejunal flexure, transverse colon, and with an interval of only 2·5 cm. the ileo-cæcal junction. This association I regard as being dominated by the right vagus nerve.

FIG. 4.

Ileo-cæcal region, Phascolomys mitchelli.

Cæcal Region in the Monotremes.

When we consider the æons that have passed since the monotremes first evolved we have reason to congratulate ourselves that two, presenting such diversities, have remained—one the Platypus, content to remain in the mountain streams, and the other the Echidna, evolving on land, where the struggle for existence was more intense—thus no doubt accounting for the greater size of its brain and the development of convolutions and sulci.

The intestinal tract in Ornithorhynchus might be described as a simple canal 5–6 feet in length and characterised by the presence of a slender cæcal tube 30–45 cm. from the termination—there being no obvious distinction between the large and small gut, except histologically. The cæcum is about 3 cm. long, with a distinct mesentery (Fig. 5), and, in all cases examined, free, with a well-defined lumen continued to its termination. The mesentery of the cæcum passes to the intestine on the side nearer the stomach. Section of the middle of the cæcal tube shows a well-defined circular but narrower longitudinal muscular layer. In the

[4] Hunterian Lectures, 1885.

[5] Proc. Linnean Soc. N.S.W., 1899 and 1900, Professor J. P. Hill.

submucous layer two nodules of lymphoid tissue are seen. The mucous layer shows long convoluted tubular glands lined by cubical cells. From the bile-duct for a distance of about 3 feet we notice in the intestine tubular glands lined by columnar epithelium and convoluted glands leading up to the base of elongated finger-like projections with processes resembling villi. In the sections in the vicinity of the cæcum no villi are present, the gut on either side of the cæcum presenting similar features to it—viz., the long convoluted tubular

FIG 5.

×c.

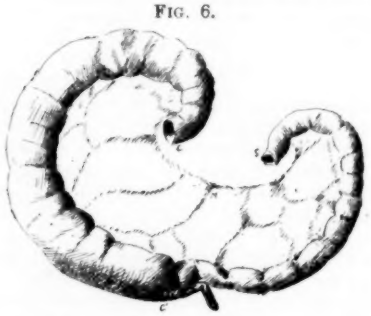
Cæcal region, Platypus. s, Small intestine; c, large intestine; c', cæcum and mesentery m'.

glands, except that there is more lymphoid tissue in the cæcum. As we progress to the cloaca the gut tract takes on more the character of mammalian large gut.[6] It seems that the cæcum in the Platypus can be regarded as an extremely primitive organ presenting practically similar structure to that of the surrounding intestine. Here apparently nature gives us a clue to future intentions in the creation of an accessory tube capable of expanding according to the needs of digestion, till in a land animal a little higher in the scale (koala) it reaches the enormous length of 8 feet and a circumference of 15 cm. What developments took place among monotremes in the struggle for a land existence we are unable even to conjecture. In the Echidna the stomach, considerably larger than that of the Platypus, may reach a length of 15 cm., and shows the mammalian character and not stratified epithelium as in the latter. The total length of the intestinal tract varies from 9 to 10½ feet, but there is a macroscopic distinction between large and small intestine, and internally we can distinguish what Professor Keith[7] refers to as cæcal colon, into which the small gut and what I regard as a vermiform appendage (when patent) separately open. This latter lies from 30 to 45 cm. from the termination of the large gut on the dorsum of the commencement of the vestibule. Its length varies from 1·5 to 3·5 cm., but compared with the cæcum of the Platypus a great character is variability as regards length, freedom, mesentery, and lumen. In 35 per cent. the lumen is incomplete, and the appendage could not be distended by compression of the intestinal content. A trace of mesentery may be noted at the root of the appendix, but all specimens examined by me but one—which is free—were adherent to the wall of the ileum, as in the wombat, this varying from an adherency at the commencement up to half the extent. In the specimen illustrated (Fig. 6)—devoid of mesentery—which was 1·5 cm. long, fully two-fifths is incorporated with the ileum, the remainder being only a slender rigid stem without lumen. I have found retrogression more marked in specimens from New South Wales than from Victoria. One specimen shows the appendix the seat of inflammatory change to which the omentum has been adherent, thus giving us a hint low down in the mammalian scale as to a function of this structure. The examination of a typical section shows the muscle coats to be relatively small, though the inner circular is the larger, but the submucous tissue is largely replaced by lymphoid tissue. This lymphoid tissue displaces also a considerable amount of the mucous layer, in the glands of which columnar and goblet cells are seen. The intestine on either side is typical large and small mammalian gut, the appendix having the character of the large gut. It is interesting to note in connexion with the disappearance of organs that while both monotremes retain the thymus gland throughout life, this is more evident in the Platypus. In the thymus of a male Echidna colloidal change has been noted.

Significance of the Foregoing.

That a group of animals—relics from a bygone age—should have remained to throw light on the early development of mammalian life is remarkable, and more so when we consider that in the one order we have a maximum cæcal development (koala), appendicular formation (wombat), and the simple intestinal tube (carnivorous marsupial). It is not without significance that the most adaptable animals are the Echidna—wombat—and wallaby. The koala with his enormous cæcum and specialised diet is becoming rapidly extinct, and on the mainland it is almost impossible in Victoria or New South Wales to procure a carnivorous marsupial, while in Tasmania Dasyurus ursinus is scarce and the marsupial wolf has practically disappeared. In Victoria the wombat, so far from needing protection, is actually on the vermin list.

FIG. 6.



×c.

Ileo-cæcal tract of Echidna. s, Small intestine; c, large intestine; c', partly adherent appendix.

Nor is this to be wondered at when one compares the physical development of the latter with the Tasmanian devil, in which animal we are struck with the muscle pallor, tendinous change, and the large deposit in parts of intermuscular fat. If one were asked to designate the perfected physical type amongst the mammalia, the wombat might be unhesitatingly referred to, and Mr. Le Souef, director of the Melbourne Zoological Gardens, has frequently commented on the great resistance of this animal to either injury or disease. The wombat, far from dispensing with a large gut, has actually one reaching the great length of

[6] On embryological grounds, however, the portion of intestine—about 12 cm. long—between the cæcum and the attachment of the colon to the meso-duodenum must be regarded as large gut. This portion is swung on the common mesentery. The colon beyond is swung on its own mesocolon.

[7] Human Embryology and Morphology, Arthur Keith, third edition.

12 to 14 feet. In the Macropodidæ this gut may reach 6 to 8 feet, while in the small Echidna 45 cm. of large intestine may be met with. The carnivorous marsupial, having the "ideal" simple tube with practically no large gut, is the least resistant of all.

Biological teaching is plain—it is decidedly against the inutility of the large intestine. It is also noteworthy that the ultimate disappearance of the appendix is a coördinate action and not necessarily associated with such frequent inflammation as we are witnessing in the human type. As has been stated, although a large number of wombats have been examined in no one case has any evidence of inflammation been seen, nor have I yet heard of an instance. In the case of man the question arises, What is the factor interfering with proper coördination? Is the leakage dietetic or is it a question of environment or due to the erect posture? One scarcely expects surgery to give the reply.

I wish to thank the President and Council of the Royal College of Surgeons of England for the privilege of carrying on research work in the Hunterian Laboratories, and Major C. V. Mackay, R.A.M.C., for valuable help in the preparation of numerous dissections.

NOTES ON FRIEDLÄNDER'S PNEUMOBACTERIUM.[1]

BY A. R. FRIEL, M.D. DUB.,
HONORARY PHYSICIAN FOR THE THROAT, NOSE, AND EAR GENERAL HOSPITAL, JOHANNESBURG.

WHEN a patient or an animal is inoculated with a bacterium there result various changes in the action of the serum of this animal *vis-à-vis* the bacterium, and it is to these changes that we are in the habit of paying particular attention. The changes which arise in the properties of a bacterium which has been subjected to the action of an immune serum are also worthy of study.

Friedländer's pneumobacterium, which is present as a general rule in cases of ozæna, is usually very resistant to phagocytosis. Most strains are quite insensitive when tested in the ordinary way of performing an opsonic test. Even if the bacteria are exposed to the action of the serum of an uninoculated human patient for some hours, and then centrifuged down and made into an emulsion with a little salt solution and put up with fresh human serum and corpuscles, phagocytosis is very little indeed. However, that they can be phagocyted, and in large numbers, can be shown by using the serum of a rabbit which has received two or three intravenous injections of a living or killed emulsion of B. Friedländer. This serum is so active that the bacteria are agglutinated and opsonised and if left long enough (one hour) in contact with the serum are dissolved. To prevent the bacteriolytic action of the serum taking effect it can be heated to 56° C. for half an hour.

If one volume of B. Friedländer be mixed with five or six volumes of inactivated immune serum and allowed to stand for three or five hours at room temperature and if the clump of bacteria which has formed by then be removed and washed in salt solution and planted on a sloped agar culture tube a good growth will have taken place by the following day. If this process is repeated for a few days it will be found that a marked change has taken place in the bacterium, and this change is preserved for several further subcultures without further treatment with immune serum. The bacterium can now be slightly agglutinated and readily opsonised by ordinary human serum.

To show the extent of this change the following table is of use. An opsonic test was performed in the ordinary way, using one volume of an emulsion of Friedländer bacteria, one volume of serum and one volume of corpuscles and incubating for a quarter of an hour:—

No.			
0	Original strain.	1 bacterium in 50 cells.	
1	"Pianticated."	59 bacteria	,,
2	,,	2	,, ,,
3	,,	57	,, ,,
4	,,	51	,, ,,
5	,,	4	,, ,,
6	,,	60	,, ,,
7	,,	132	,, ,,
8	,,	177	,, ,,
9	,,	149	,, ,,
10	,,	144	,, ,,

In the first few experiments the serum used for sensitising the bacteria prior to growth on a culture tube was unheated, but in the later experiments it was heated. To designate this particular quality or property of bacteria the *descendants* of "sensitised" organisms the word "piantic" is suggested. It is derived from the Greek πιαντικός, fat, the idea thought of being fattening an animal previous to slaughter.

In treating patients suffering from ozæna I find that to get rid of the Friedländer infection it is advantageous to give the vaccine intravenously, and I am in the habit of using as a dose two millions of a sensitised non-sterilised emulsion in salt or distilled water, which is injected into a vein at the bend of the elbow or in the forearm.

Sensitisation is effected by using the serum of an inoculated rabbit and then centrifuging the bacteria down and re-emulsifying in salt solution or distilled water. If agglutination is very marked it is necessary to use distilled water to ensure a homogeneous emulsion. The bacteria are counted before mixing with serum as it is not possible to do this afterwards on account of agglutination. A dose of two millions or thereabouts is small enough to avoid the production of severe constitutional symptoms such as bad headache and vomiting, and large enough to cause slight malaise. It need not be much increased and can be repeated at intervals of three or four days for a few times. The improvement in the patient's condition is marked.

In seeking for an explanation of why an intravenous injection of Friedländer is superior for purposes of treatment to a subcutaneous one, it may be noted that if a rabbit receives a large dose of these bacteria intravenously and the blood be examined at intervals till no bacteria are detected and then the rabbit be chloroformed and killed and smears made from the liver, kidneys, muscles, lungs, and bone marrow, it will be found that the bacteria are in great numbers in the liver cells, some are also to be seen in the kidney, but practically nowhere else. It may be that for the production of some immune bodies an internal organ such as the liver is an essential factor and

[1] This paper was completed before the outbreak of war. Since then further work on "piantication" has been described in the Reports of the South African Institute for Medical Research.

that consequently if the vaccine is given intravenously the production of immunity is more rapid and greater.

During the past few years I have given patients on many occasions subcutaneous injections of Friedländer vaccine with no visible beneficial effect, but since I have given the vaccine intravenously I have found great benefit produced. Instead of a Friedländer infection being a most refractory one to treat, I find it to respond at once. In some cases after a course of treatment it may be difficult or impossible to get a culture of the organism from the nose.

It is for ozæna that I have used a Friedländer vaccine, but I would not like it to be gathered from the above that to give an intravenous injection of Friedländer vaccine is all that is necessary to do to alleviate patients suffering from this disease.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GENERAL TETANUS FOLLOWING LOCAL TETANIC SPASMS OF INJURED LIMB.

BY THOMAS B. MOUAT, M.D. EDIN., F.R.C.S. ENG.,
CAPTAIN, R.A.M.C.(T.), 3RD NORTHERN GENERAL HOSPITAL, SHEFFIELD; HONORARY ASSISTANT SURGEON, ROYAL INFIRMARY, SHEFFIELD.

ON Sept. 25th, 1915, the patient (a private in the Black Watch, aged 40) was wounded by a fragment of shell, which caused an extensive lacerated wound of the left upper arm, with compound comminuted fracture of the left humerus. A field dressing was applied and tightly bandaged on, to arrest the hæmorrhage from the wound. Fourteen hours after being wounded he reached a field ambulance at La Gorgue, where he was given an anæsthetic, the wound was cleaned and dressed, and antitetanic serum was administered subcutaneously. He was then sent down to Boulogne, where he remained from Sept. 27th to Oct. 12th, when he was transferred to the 3rd Northern General Hospital, Sheffield.

On admission, on Oct. 13th, there was a large and deep lacerated wound on the posterior aspect of the left upper arm, with extensive loss of substance of the triceps muscle. The middle portion of the shaft of the humerus was comminuted and necrosed fragments had apparently been removed, as there was a gap of over an inch between the broken-up ends of the bone in the base of the wound. The musculo-spiral nerve was completely divided, and the muscles supplied by it and by the median nerve gave the reaction of degeneration. The wound was septic and covered with unhealthy granulation tissue.

From the date of admission—Oct. 13th—up to Nov. 5th, when the limb was amputated, the patient complained of painful spasms in the injured limb. These spasms of the muscles of the injured limb were noticed from time to time, and they were usually excited by the dressing of the wound. A circular amputation was performed on Nov. 5th. The line of amputation was carried across the wound, which was now apparently clean and covered with healthy granulations. The nerves cut across were swollen and œdematous-looking, and stood out in a striking manner on the face of the stump—they were pulled down and cut off short.

On Nov. 7th (two days after amputation) the muscular twitching, which had recommenced in the muscles of the stump, spread gradually to the muscles of the shoulder girdle. The patient began to look distressed, was grey-looking, and sweating freely. The condition was thought to be due to an ascending neuritis, as the muscular twitching before operation had been also ascribed to this. On the 8th the flaps of the stump were opened up freely, and the wound showed signs of local infection. On the 11th the spasms spread to the shoulder-girdle muscles of the opposite side. Two hours later the patient developed trismus and head retraction. The appearance and symptoms had now become those of an ordinary case of tetanus, with the exception that the spasms were still most marked in the muscles of the shoulder girdle of the injured limb, and especially in the pectoral muscles of that side. 3000 U.S. units of antitetanic serum were given intrathecally, after allowing the escape of a similar amount of cerebro-spinal fluid; 1500 units were also injected into or about the upper cords of the brachial plexus on the left side. Chloral hydrate in 15-grain doses was given four-hourly by the mouth. On Nov. 13th the patient had got steadily worse and was in a very serious condition. The general muscular spasms were intense and frequent, and he was unable to take nourishment or to retain nutrient enemata. 6000 units of antitetanic serum were injected intrathecally, and apparently with distinct benefit to the patient. Gradual improvement set in. The septic condition of the amputation stump cleared up and the wound healed. The muscular spasms gradually became less severe and less frequent, and ceased completely about Nov. 20th. The patient now appeared to be convalescent, but in the first week of December he developed a right-sided subdiaphragmatic abscess, possibly of pyæmic origin. This was opened and drained on Dec. 6th. The patient died, apparently as a result of this complication, on Dec. 30th.

The points which appear to be of interest and the conclusions which might be drawn from the above case are as follows:—

1. The onset and persistence of the tetanic spasms in the injured limb. Several similar cases have been recorded recently.[1] In all these it is definitely stated that the patient had received a prophylactic injection of tetanus antitoxin. The unusual mode of onset and progress of these cases is apparently due to the fact that a certain amount of central resistance to the spread of the toxin had been set up by the prophylactic injection of tetanus antitoxin. A sufficient interval had, however, elapsed before its administration to permit of a local spread of the toxin into the efferent nerves of the injured limb, which caused the onset and persistence of the local symptoms.

2. The further absorption or spread of the toxin which followed the operative traumatism of the injured area was sufficient to overcome the increased general resistance which had resulted from the prophylactic injection.

3. Definite amelioration of the symptoms followed the intrathecal injection of a large dose of tetanus antitoxin, 6000 U.S. units, whereas a dose of half that amount appeared to have little effect.

[1] Lieutenant-Colonel R. D. Rudolf: Tetanus-like Spasm Localised to the Wounded Limb, THE LANCET, Nov. 13th, 1915, p. 1084.

GASTROTOMY IN A BABY AGED 6 MONTHS.

BY C. P. G. WAKELEY, M.R.C.S., L.R.C.P. LOND.,
HOUSE SURGEON, KING'S COLLEGE HOSPITAL; SURGEON, R.N.

THE patient, an infant aged 6 months, swallowed an open-clasp brooch two days before being admitted to hospital. On admission the child was X rayed and the brooch was seen to be situated in the lower third of the œsophagus; it was noticed that the brooch was open with the head of the pin projecting towards the mouth. An attempt was made to close the brooch with the aid of a bronchoscope, but it was pushed down into the stomach, as was verified by a second X ray photograph. The condition of the patient was not very good. She had not taken the breast well since the brooch had been swallowed and had vomited at intervals. The next day the baby became very collapsed, but her condition improved on subcutaneous saline infusion; however, her temperature suddenly went up to 107·2° F., pulse 192, and respirations 84. It was decided to operate.

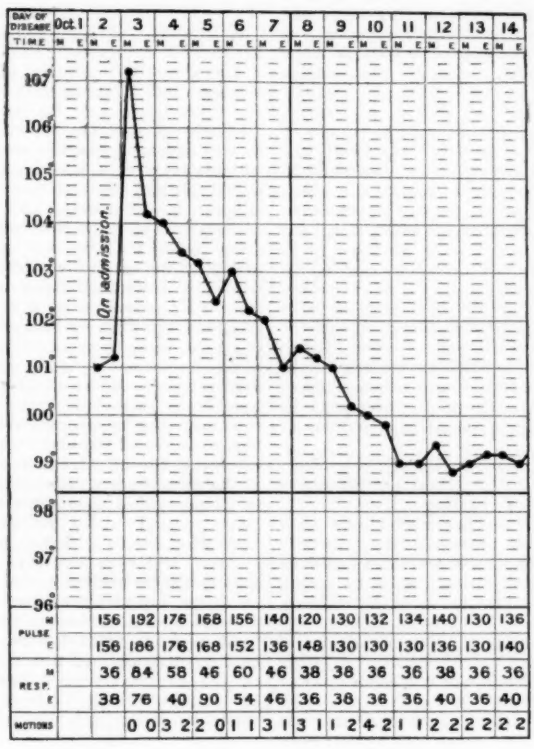
A median incision was made above the umbilicus, the stomach was found and carefully drawn out of the wound, and the rest of the peritoneal cavity packed off with hot sterile towels. The pin part of the brooch was seen projecting through the anterior wall of the stomach near the greater curvature. There were some isolated flakes of coagulated lymph covering the peritoneal surface of the stomach near the site of perforation. An incision was made over the brooch in the long axis of the stomach and the foreign body removed. The interior of the stomach was very congested and in a semi-ulcerated condition. The stomach wound was closed by Czerny-Lembert sutures and the abdominal wound closed without drainage. The baby was kept in a tent-bed for the next five days, and was fed by her mother 12 hours after the operation.

A drachm of the following mixture was given every four hours for the first five days after the operation to relieve the ulcerated condition of the stomach: Bismuth carbonate, 5 gr.; sodium bicarbonate, 1½ gr.; spirit of chloroform, 1 minim; tragacanth, in powder, ⅛ gr.; water to 1 fl. dr.

The child was fed by her mother every four hours, night and day; she vomited slightly after the operation. The abdominal wound healed well, and the little patient left hospital three weeks after the operation with a normal temperature and pulse. The hyperpyrexia on the day of the operation is very interesting, and the child was very fortunate to pull through after such a condition.

I have to thank Mr. A. Boyce Barrow, not only for kindly allowing me to publish this case, but also for permitting me to perform the operation in his absence.

Temperature Chart of Mr. C. P. G. Wakeley's Case of Gastrotomy.



Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

Discussion on "Soldier's Heart."

A MEETING of this section was held on Jan. 18th, Lieutenant-Colonel W. HALE WHITE, R.A.M.C. (T.F.), the President, being in the chair. The subject under discussion was "Soldier's Heart."

Sir JAMES MACKENZIE, in opening the discussion, said it may well be recognised that the trying life to which a soldier was exposed placed a strain on his heart, and found out impaired hearts, whether they had a detectable lesion or not. During and after the American Civil War it was shown that there was a form of heart trouble to which soldiers were particularly liable—namely, that which was known as "irritable heart." Shortly after the outbreak of the present war, soldiers who had been invalided because of heart trouble began to consult him, and at the later stages of the conflict they had appeared in increased numbers. When he was asked to take charge of the inquiry into disorders of the heart for the Medical History of the War he had an object in view which would give their researches a profitable aim. Dr. R. M. Wilson and he had examined 400 cases. In 90 per cent. of the cases which had been certified as having heart affections they were found not to be primarily heart cases, so that the principles of treatment applicable to those cases differed widely from those appropriate to real heart failure. There was a good deal of variation in their appearance and symptoms, but they were usually spare, with drawn faces, and showed great vaso-motor instability. Sometimes the hands and fingers became pale, while at other times they were thick and red; and the nose became red, sometimes even blue, on slight exposure to cold. Even after treatment by rest and feeding they were pasty-faced and cold and seemed to be scant of breath. Asked how they felt, a common reply was "Rotten!"; they easily became exhausted, were breathless on moderate exertion, and frequently there was pain in the region of the heart. Often the frequency of the heart beat was not increased, but in some it maintained a rate of 120 per minute. Exercise might cause undue rapidity, and it was in consequence of this excitability that the term "irritable heart" had been used. A slight increase in the size of the heart was not uncommon in this condition; in acute cases there was some œdema of the legs. The mental condition of these patients also varied; depression was not infrequent, and often they became generally irritable and restless. Some

were content to lie in bed and brood over their woes. A condition somewhat akin to this was found in people who were recovering from an exhausting illness, or who had had a severe surgical operation, or had endured prolonged and anxious labour with but little sleep. In most of the cases of that kind in this war there was a history of an illness preceding the breakdown; they were in the trenches, and felt well until one day which they remembered. They were found to have a raised temperature and were given a few days' leave, but on returning they still felt far from well, and after a few weeks of hard trench life they collapsed. Sometimes they had had diarrhœa, sometimes measles, but mostly the history pointed to a form of infection. Many of the patients recognised the gradual onset of the trouble. In some a history of infection could not be gleaned, but there had been a strenuous life. He related the history of one case as an example, the patient —who had been operated upon for appendicitis—having been able to snatch only short periods of sleep in the daytime, with none at night, for several consecutive days, resulting in a feeling of illness and pain over the heart. Some who had never been to the front and had not experienced excessive bodily or mental strain had shown the same symptoms following some febrile affection. The "soldier's heart" he considered to be a sign of general exhaustion, the circulatory symptoms being but part of the general manifestation. These differed from the cases in which a disease-producing organism had invaded the heart itself. In some cases there might be doubt as to whether the condition might not be due to infection of the heart itself. Judgment must be deferred until the subsidence of the fever. If the temperature persisted for some weeks and no source of infection could be found, then the idea of infection of the heart became strengthened. In the poisoned heart the first sign was usually a sense of exhaustion, often supposed to be a sign of cardiac inefficiency, but it owned a different mechanism. People suffering from toxic influence had the central nervous system affected, as shown by a feeling of illness and depression, and they had irritability of temper, vaso-motor disturbance, and extra susceptibility of the peripheral circulation. Chilliness persisted after a cold bath, but at times heat flushings passed over the whole body. There was also a feeling of discomfort, sometimes even of pain, over the heart. The persistence of pain when the patient kept at rest he regarded as strongly suggestive of poisoning. "Soldier's heart" was due to trouble in other systems as well as the cardiac, such as the central nervous system. It was unfortunate that the regulations required that each sick soldier should be certified as suffering from a definite complaint, because the hurry of examination did not permit of a careful study of all the cases. A recognition of the nature of the illness would at once suggest the appropriate treatment—e.g., if microbial, efforts would be made to increase the patient's resistance; if poison, attempts would be directed to eliminating the poison. The mental condition must also be taken into consideration. Too much rest in bed should be avoided for irritable hearts; the heart, like other organs, was benefited by judicious exercise. The aim should be to help the body as a whole, and to this end the provision of enjoyable games did much, the patient being enjoined not to continue after the interest flagged or he felt tired. This advice was safe in all obscure or doubtful heart conditions. Grievous injury was sometimes done to the mind of the soldier who was told he was suffering from an affection of the heart which was of grave importance.

Dr. R. M. WILSON gave a historical review of the subject, and expressed agreement with the conclusions of Sir James Mackenzie, with whom he had been working.

Dr. F. J. POYNTON referred to the heart affections, such as pericarditis and endocarditis, produced experimentally from streptococci. He did not think a heart which had once thoroughly broken down in training would ever be strong enough again to allow its possessor to be fit for military service. The factor of infection at the present moment was of the highest importance, owing to the prevalence of dysentery and other gastro-intestinal disorders. In some cases of "soldier's heart" he thought the condition was due to the development of the heart not having kept pace with the rest of the body; hence it failed when strain was put upon it. He had never been able to regard the heart as quite dissociated from the general nervous system, and one day it might be recognised how important it was to safeguard tall strong youths in this regard, when steps would be taken to save them from early strain.

Dr. R. W. MICHELL spoke from personal experience of the conditions at the front, and related a number of examples of the condition under discussion which had come before him. Various forms of irritability were seen, including the passing of large quantities of urine, as much as three quarts at a time. He fully agreed with what had been said as to the influence of toxæmia.

Dr. PHILIP HAMILL expressed his agreement with the opener, and related a number of interesting cases. He fully agreed that the psychical factor must be treated before recovery could be expected. But, apart from the latter, his view was that the hearts of many of these cases were permanently damaged; and if particulars were carefully taken and the cases followed up, it would be for the next generation to draw conclusions as to the precise nature of the disorder.

Dr. FLORENCE STONEY (who has been working at Fulham Military Hospital) declared that irritable heart was only one symptom of Graves's disease, and that this condition of heart was not met with by itself. Her method of treatment was to reduce the size of the thyroid gland, by means of X rays, to the desired extent, and so affect favourably the heart condition; and she had been engaged upon that method for eight years with encouraging results. Exophthalmic goitre she regarded to be at the root of the whole affection.

Dr. BEZLY THORNE pleaded for the use of the Nauheim treatment in cases of "soldier's heart," as it had yielded him excellent results.

Dr. ALEXANDER MORISON and Dr. T. R. BRADSHAW also spoke, and Sir JAMES MACKENZIE replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

The Electrocardiograph.—Cases connected with Liver and Biliary Passages.

A MEETING of this section was held on Nov. 12th, Professor J. A. LINDSAY, the President, being in the chair.

The PRESIDENT read a paper, illustrated by diagrams, tracings, and a lantern demonstration, upon the use of the Electrocardiograph. He said that amongst the recent advances in medicine an important place must be assigned to the development of instrumental methods of observation in connexion with the heart in health and disease. The polygraph and the electrocardiograph had opened up a new chapter in this field, and had rendered many former observations more or less obsolete. While too much importance could not be assigned to a careful observation of the whole clinical complex, instrumental methods added new and important facts. The phenomena of disease were thus presented at first hand, and the duty of the clinician was that of interpretation. These methods were of special value in certain departments where the difficulties of diagnosis were formerly greatest, as, for example, in the differentiation of the cardiac arrhythmias, the detection of heart-block and of auricular fibrillation, and, in general, in the recognition of myocardial changes. He briefly described the structure of the electrocardiograph and the methods of employing the instrument, as well as the electrical phenomena of the normal heart. The chief applications of the instrument in disease were then dealt with, the following conditions being passed under review—viz., heart-block, auricular fibrillation, auricular flutter, myocardial degeneration, extrasystoles, and hypertrophy of the ventricles. Electrocardiography was probably destined to throw light upon the action of drugs, especially that of the cardiac remedies of the digitalis group. It could not be expected to throw direct light upon valvular lesions. Its message was from the cardiac musculature, not from the cardiac valves. None of the usual valvular lesions had a precisely distinctive cardiogram, though that of mitral stenosis could sometimes be recognised. Hence, a normal electrocardiogram

was no guarantee of a normal heart. But valvular lesions sooner or later produced muscle changes, and these wrote their story upon the cardiogram. In conclusion, the speaker deprecated any exclusive reliance upon instrumental methods. The final test of cardiac sufficiency or insufficiency must remain the appeal to experience and to clinical observation.—Professor W. H. THOMPSON referred to the numerous difficulties in the employment and interpretation of the method, but expressed his belief that time would elucidate the majority of these. He pointed out that while the P – R distance is important, the T wave is even more so, as showing whether ventricular contractions were dropped or not. A large amount of experimental work had been done in Belfast by Dr. Gibson and Professor Milroy with particular reference to this T wave.—Dr. J. LITTLE also spoke.—The PRESIDENT, in replying, said that practically all the tracings had been obtained in the Victoria Hospital, Belfast. Instrumental methods could never replace trained clinical observation, but they had one most important quality—namely, the elimination of the personal factor.

Sir JOHN MOORE reported on three cases of more than usual interest in the wards of the Meath Hospital, all connected with the liver and biliary passages, and illustrating the value of surgical help. The first case was that of a time-expired soldier, aged 27 years, who had served in India for six years. In August, 1914, he came back to France and was severely wounded three months later, his right tibia being fractured. A year before he left India he apparently had suffered from amœbic dysentery. Two months before admission to hospital he again suffered from pain in the right side, followed by vomiting and diarrhœa. The liver was found to be enlarged and tender on pressure. Mr. H. Stokes operated in the belief entertained by him and by the speaker that the man had hepatic abscess. The liver was the seat of an acute inflammation, but no pus was found. Marked improvement followed on the operation. The medical treatment consisted in the hypodermic injection of emetine hydrochloride in full and repeated doses. The man made an excellent recovery. The other two cases were instances of biliary colic, relieved by operation. In the former the number of stones (92) was remarkable; in the latter case Mr. R. Lane-Joynt, on operating, found that the gall-bladder was obliterated. This was a complicated case from its nature and by the development of a duodenal fistula after the operation. But in 10 days the patient began to amend—steady improvement set in, ending in a full restoration to health. Two stones of considerable size were extracted from the common bile-duct.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting was held in the society's rooms, West London Hospital, on Jan. 14th, Dr. Leonard C. T. Dobson, the President, being in the chair.—The following cases were shown:—Dr. F. S. Palmer: 1. Functional Monoplegia due to shock from bursting shell; soldier aged 24. 2. Complete Mutism and Deafness due to shock from bursting shell; soldier aged 28. Steady and uninterrupted progress under a system of re-education, without hypnosis.—Major W. McAdam Eccles: 1. Abnormal Venous Channel in a male patient; dilatation of the anastomosis between the two superficial external pudic veins, with imperfect descent of the left testis. In reference to the case of caput Medusæ shown by him at the clinical meeting held on Nov. 5th Major Eccles described the abnormal conditions revealed by laparotomy of some of the intra-abdominal veins. 2. Two cases of Femoral Hernia in Man.—Mr. O. L. Addison: Malignant Glands of Neck; male, aged 60; almost total disappearance under massive doses of X rays, heavily filtered, for a period of about three months at the rate of two or three a week.—Dr. E. Arthur Saunders: 1. Severe Rickets and Tuberculosis; male, 5 years. 2. Subacute Rheumatism; multiple rheumatic nodules in occiput (temporal regions), knuckles, elbows, wrists, ankles, knees, flexor tendons of wrists, sternum, scapulæ, and vertebræ; male, 11 years.—Mr. N. Bishop Harman: 1. Case showing the effects of Chronic Blepharitis said to have followed measles; male, aged 36. This was described by Mr. Harman as being one of the worst cases of chronic blepharitis which he had ever seen. 2. Iridodialysis caused by air-gun injury; female, 10 years.—Dr. George Pernet: 1. Ichthyosis of Trunk and Limbs; male, 6 years. 2. Morphœa, Scleroderma, outer sides of legs; female, 14 years.—The following skiagrams were shown by Dr. Reginald Morton:—Cases under the care of Dr. Saunders: 1. Absorption and Collapse of Fourth and Part of the Fifth Lumbar Vertebræ following paratyphoid fever; male, 30 years. 2. Large Aneurysm of the Arch of the Aorta, with protrusion of the sternum (two skiagrams). Cases under the care of Mr. Addison: 1. Myeloid Sarcoma of Upper Ends of Tibia and Fibula; female, 43 years. 2. Old case of Tuberculous Disease of the Hip-joint; male, 26 years. 3. Large Branched Calculus in the Pelvis, and a Round Calculus in the Cortex of the Left Kidney; female, 36 years. Case under the care of Mr. H. S. Souttar: Tuberculous Disease of the Hip-joint with Dislocation; male, 8 years. Case under the care of Mr. H. Tyrrell Gray: Shrapnel Bullet in Side of Neck, which entered in the region of the scapula of the opposite side; male, 30 years. Case under the care of Mr. E. D. McDougal: Shattering of Upper Part of Humerus by Shrapnel, showing curious formation of new bone.—The President, Major Eccles, Dr. Saunders, Dr. Seymour Taylor, Dr. Harold H. Sanguinetti, Mr. Addison, Dr. S. D. Clippingdale, Mr. Rowland Pollock, and Dr. Morton took part in the discussion on the various cases.

Reviews and Notices of Books.

Veterinary Anæsthetics.

By FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E. London: Baillière, Tindall, and Cox. 1915 Pp. 86. Price 5*s.* net.

Professor Hobday, who is at present serving as a major in the Army Veterinary Corps in France, gives a useful account of anæsthetics and narcotics for animals and birds, studied especially from the point of view of the general veterinary practitioner. Commencing with the selection and practical application of anæsthetics for the different species of animal patients which the veterinary surgeon of the present day is called upon to treat, particular attention is drawn to the precautions necessary to ensure the safety of the individual patient, and in this respect the veterinary surgeon has many difficulties to contend with. Only rarely can he obtain the assistance of a skilled anæsthetist, and thus be set free to attend exclusively to his operative work. Hence it is interesting to note to what use narcotics are put, and especially the use of morphia for operations on the dog, the peculiar idiosyncrasy of this animal for the drug rendering it a most apt subject. Doses which would be fatal to a man of 10 or even 15 times the body-weight act merely as a narcotic in the dog, and are sufficiently deadening to pain to enable even very severe operations to be performed with safety. On the horse and cat, on the other hand, morphia has an excitant and deliriant effect. Horses and dogs, according to the author, take chloroform very well, and numerous illustrations are given of apparatus and inhalers used for dosimetric administration. By these, according to statistics given, the proportion of chloroform to air can be regulated to a nicety, and several of them we recognise as having been brought before the members of the Anæsthetics Section of the Royal Society of Medicine, and the recent International Congress of Medicine. The general anæsthetisation of the bird, especially the ostrich and the common fowl, is fully dealt with, chloroform being again preferred. The chapters on local anæsthesia deal with all the local anæsthetics in general use, and mention the precise limit of dose which can be employed with safety. The final chapter is devoted to the intraspinal method.

LIBRARY TABLE.

Medicine and Meditation. Occasional Writings by ALEX. LEWERS, L.R.C.P. Lond., D.P.H. Lond., Senior Honorary Physician to St. Vincent's Hospital, Melbourne, and Lecturer on Clinical Medicine, St. Vincent's Medical School. Melbourne: Ford and Son. 1915. Pp. 127.—In this little volume 57 short articles of medical interest which have already been published in various journals are collected together by the author. They cover a wide range of topics, for they deal with euthanasia, electricity, drink cures, syphilis, phrenology, and eugenics—to mention a few of the subjects taken at random; while matters which are likely to receive increased attention in the future, such as physical culture, school cooking, and the inspection of school children, are also included. Dr. Lewers has a plain straightforward style, and as a general rule his judgments are marked by breadth of view and proper caution. Sometimes the fact that his judgment is based on the consideration of circumstances as they occur on the other side of the globe obtrudes itself abruptly. For example, he makes the sweeping statement that "the consumptive of to-day is viewed with as much popular distrust as the leper of the Middle Ages, and the still growing dread is not lessened by the fact that the results of treatment have not shown that any more definite control of the disease has been established." Surely in England, at any rate, the public know now that much phthisis not only can be, but is being prevented. With regard to the statement that Shakespeare's recognition of genius as a physiological abnormality led him "to remark on the near alliance between madness and great wit," we think this is an old slip. Anyhow, the familiar line, "Great wits are sure to madness near allied," occurs in *Absalom and Achitophel* and not in *Hamlet*, though Shakespeare's tragedy is often searched for the quotation. Dr. Lewers has provided us with a very readable and useful little volume.

Japan. By PIERRE LOTI. Translated from the French by LAURA ENSOR. Pp. 334. Price 7*s.* 6*d.* *Jerusalem.* By PIERRE LOTI. Translated from the French by W. P. BAINES. Pp. 212. Price 7*s.* 6*d.* net. London: T. Werner Laurie. 1915.—These translations of two well-known works of the distinguished French sailor who writes under the pseudonym of Pierre Loti are part of a series of his works which is being published in English guise with appropriate illustrations. The work entitled "Japan" is, of course, a translation of the well-known romance "Madame Chrysanthème," which profoundly amused and somewhat scandalised literary circles more than a quarter of a century ago. The story has in its English form more of the delicate charm of the original than might have been expected, and this is assisted by profuse illustrations by Rossi and Myrbach, which have caught the very spirit of the author. Some day or other, no doubt, Admiral Viaud's book will form an interesting historical note, so enormously does the Japan of to-day differ from the Japan where he spent that long ago summer, and where the episode occurred round which the story is grouped.

"Jerusalem" is a literary and poetical guide-book, and the same difficulties do not arise in its translation which must have beset the translator of "Japan." Pierre Loti's book on the cradle of Christianity claims only to be a description of its present-day ruins and desolation, and of the influence of the sacred place on a convinced unbeliever. The religious musings and emotions have not the ring of actuality, while the verbal pictures show Pierre Loti to have revelled in the scene. But it is curious to be reading a description of the old city as derelict and no longer of any account save as a centre of pious pilgrimages at the time when we hear of it in the journals as an important station on the Turkish lines of communication or advance. Anything like desertion must be at complete variance with its present aspect.

We recommend both these translations to our readers very sincerely. Pierre Loti is a great man of letters, and the poetry and charm of his writings come out in the English version to an extent which we think will be a little surprising to those who have read his books in the original. We wonder whether altered circumstances have changed his views of the English.

JOURNALS.

The Indian Journal of Medical Research. Vol. III., No. 2. —The first contribution to this number is by Lieutenant-Colonel W. D. Sutherland, I.M.S., Imperial serologist, Calcutta, and is in the form of a note on 2643 medico-legal cases, in which 6566 articles suspected to be blood-stained were examined during a period of 31 months. Of the 2643 cases in question 1650 related to charges of murder, 101 to culpable homicide, 87 to attempted murder, 284 to assault, and 189 to rape. Of the total 6566 suspected articles submitted for examination 1380 were found to be free from blood. Colonel Sutherland remarks that the wiles of the Indian criminal, his friends and his representatives; the intense longing that is felt by many a villager to get his enemy into trouble at whatever cost; the ingenious attempts of the unchaste village maid to pose as the victim of a brutal and lustful man, may all be gathered from the summaries of some of the cases that have come under notice.—Major S. R. Christophers, I.M.S., and Dr. K. R. K. Iyengar discuss in a joint paper the effect of hæmolytic drugs, toxins, and antisera upon the hæmolytic point (so-called isotonic point) and the association between this point and hæmoglobinuria. Major Christophers also furnishes two other articles—one on the pilotaxy of anopheles and the other on the male genitalia of anopheles, illustrated by plates.—Some notes on Sumatrian culicidæ are contributed by Dr. A. T. Stanton, bacteriologist of the Institute for Medical Research, Federated Malay States, and in continuation of his special studies on cholera Major E. D. W. Greig, I.M.S., gives an account of some experiments he made on the production of gall-stones in rabbits following intravenous inoculations of cholera-like vibrios isolated from the stools of cholera patients and from water.—Major A. G. McKendrick, I.M.S., director of the Pasteur Institute of India, Kasauli, supplies two articles, the first dealing with the epidemiological significance of repeated infections and relapses, and the second with the epidemiological significance of splenic enlargement in malaria.—Another instalment of their special studies on the treatment of snake-bite is contributed by Captain Hugh W. Acton, I.M.S., and Captain R. Knowles, I.M.S., and this deals with the present position of antivenene therapy. These experts express the opinion that with the remedies at present available for the treatment of bites from poisonous snakes, if properly applied, it should be possible to save a large percentage of the cases which now prove fatal. The general lines of procedure recommended by them are: (1) to apply a firm ligature immediately; (2) to impregnate the whole area of the bite with a hypodermic injection of a strong solution of gold chloride; and (3) to inject from 100 to 200 c.c. of antivenene intravenously, if the biting snake be suspected to have been a cobra or Russell's viper. If symptoms of venom intoxication come on, further and even larger injections of antivenene should be given intravenously. With sera concentrated ten times a dose of 20 to 60 c.c. should save every case of cobra bite.—The last paper in this number of the journal is a short one by Mr. J. L. Mitter, entomological assistant at the Central Research Institute, Kasauli, on the occurrence of Stygeromyia maculosa at Kasauli and its breeding place.

ROYAL MEDICAL BENEVOLENT FUND.

AT a meeting of the committee held on Dec. 14th, 1915, 46 cases were considered and £448 granted to 40 of the applicants. The following is a summary of the cases relieved:—

Widow, aged 41, of L.R.C.P. Edin. who practised at Edmonton and died in 1910. At husband's death applicant was left practically unprovided for, with two children, now aged 8 and 10 years. Has managed to earn a living until the war commenced by literary work. Has friends in Los Angelos who recommend her to go there, as the prospects look good for herself and children. Help required towards her passage, &c. The Fund granted £20 and the Guild also provided clothes. The Professional Classes War Relief Council coöperated with the Fund and made a grant of £10.—Daughter, aged 27, of L.R.C.P. Irel. who practised in Ireland and died in 1895. Applicant's health was undermined through the long nursing of her mother who has recently died. The Fund made a small grant a little time ago to enable her to take a short holiday. A further grant of £2 was made.—Widow, aged 45, of M.R.C.S. Eng. who practised at Gravesend and died in January, 1915. Applicant was left with three daughters, ages 13 to 21, and one son, aged 20, who is abroad and whose health is broken down. Applicant required a little help towards the education of the daughters to earn their own living. Owing to the war it was impossible to sell the practice to advantage at present. Applicant voted £10 and the case referred to the Guild with a view of helping with the education of the girls.—Daughters (aged 62, and twins 45) of M.D. Edin. who practised in London and died in 1873. Applicants' immediate trouble caused by the death of mother who had a life interest in some property. They endeavour to make a living by taking in paying guests and doing needlework, but have not been very successful of late. Voted £10 and referred to the Guild.—Daughter, aged 44, of M.R.C.S. Eng. who practised in South Wales and died in 1872. For many years managed to earn a living as a laundress, but recently has developed cancer which has quite incapacitated her from working. Voted £12 in 12 instalments and referred to the Guild.—Widow, aged 45, of M.R.C.S. Eng. who practised at Beccles, where he had only recently established himself, and died in January, 1915. Applicant is trying to earn a living by taking in paying guests, but owing to some extent to her house being near the East Coast she has not been very successful, but has prospects of improvement. Voted £10.—Daughter, aged 58, of M.D. Dub. who practised in the Isle of Man and died in 1882. Applicant's money was badly invested, and she lost all. She is now an invalid suffering from rheumatoid arthritis. Highly recommended by the Liverpool Branch of the Guild. Voted £5 to the applicant through the Liverpool Branch of the Guild.—Daughter, aged 49, of M.D. Lond. who practised in London and India and died in 1873. Applicant was able to supplement an income of about £20 per annum by teaching French, but owing to ill-health is unable to continue this work. Relieved twice, £10. Voted £10 in two instalments.—Widow, aged 51, of M.D. Dub. who was in the Royal Army Medical Corps and died in 1905. Applicant lives in a flat rent free, and has a small army pension. In addition to her four daughters, ages 21 to 26, she has her mother partly dependent on her. None of the daughters are strong, nor have they been trained for work. They have recently been training for nurses. Voted £5 and referred to the Guild.—Daughter, aged 55, of L.R.C.S. & P. Glasg. who practised at Glasgow and died in 1883. Applicant managed to earn a living before the war by teaching music, but since October, 1914, has practically lost all her pupils. Only permanent income £4 12s. per annum, and lives in own house. Voted £12 in 12 instalments. Recommended by the Glasgow Branch of the Guild.—Daughters, ages 44, 50, 55, of M.R.C.S. Eng. who practised at Bodmin and died in 1912. Until father's death they were all able to live comfortably together, as father had a life interest in some property. Only income of the daughters £5 each per annum. Voted £18 in 12 instalments jointly, and referred to the Guild.—Widow, aged 73, of M.R.C.S. Eng. who practised at Rye and died in 1891. Applicant has cataract in both eyes and unsatisfactory health. Has two daughters, both married. Lives in own house, but has only very limited means. Voted £12 in 12 instalments.—Daughters, ages 64, 66, of M.D. Leyden who practised in London and died in 1858. Applicants' only certain joint income £28, which they supplemented by taking in boarders. Owing to the war the boarders have entirely ceased and they are in difficulties. Helped by the Fund 21 years ago. Voted £12, and the elder sister recommended for an annuity.—Widow, aged 63, of M.D. Dub who practised at Cambridge and died in 1904. Applicant had managed to live by taking in resident pupils, but owing to the war has practically lost them all. Rent paid by relatives, but now in temporary difficulties owing to the loss of above and illness. Voted £10, and referred to two other organisations for help.—Widow, aged 58, of L.S.A. Lond. who practised at Bournemouth and died in 1913. Applicant was left totally unprovided for. Has a pension of £26 per annum from another society, and during the last year has only received £5 from lodgers. Health very unsatisfactory and unable to let more rooms. Relieved once, £12. Voted £12 in 12 instalments.—Daughter, aged 53, of M.R.C.S. Eng. who practised in London and died in 1880. Applicant's health is very bad, and she is quite unable to work. Lives with a widowed sister who finds home, but cannot do more. Relieved six times, £64. Voted £10 in two instalments.—Daughter, aged 58, of L.R.C.P. Lond. who practised at Brierley Hill and died in 1872. Applicant suffers from chronic ill-health, and recently fractured her ankle. Only income an annuity of £25 from another charity and a little help from friends. Relieved eight times, £53. Voted £12 in 12 instalments.—Widow, aged 54, of M.R.C.S. Eng. who practised at Yelverton and died in 1908. Applicant endeavours to make a living by taking in boarders, but does not get sufficient to make it pay. Relieved nine times, £107. Voted £12 in 12 instalments.—Widow, aged 42, of M.R.C.S. Eng. who practised in North Wales and died in 1910. Applicant was left quite unprovided for with two children, now aged 6 and 9 years. Has free rooms in return for services, and makes a little by selling goods on commission, but not sufficient to meet expenses. Relieved four times, £40. Voted £10 in two instalments.—M.R.C.S. Eng., L.R.C.P. Lond., aged 49, who practised in Lancashire and abroad. Applicant is married, with three children, now aged 9, 14, 16 years, and he has become totally blind. Wife and children are cared for by relatives. The applicant is now studying massage in London, and hopes shortly to be qualified and earn his living. Only income £12 per year from a charity for the blind and a little from friends. Relieved once, £10. Voted £10 and referred to the Guild.—Daughter, aged 49, of M.R.C.S. Eng. who practised at Gillingham and died in 1911, and was for some years an annuitant of the Fund. Through ill-health the applicant is not able to earn her living, and receives her food in return for looking after a child during the day. Has to pay rent for her room. Relieved twice, £17. Voted £12 in 12 instalments through the Guild.—Widow, aged 64, of M.B. Glasg. who practised in South Wales and died in 1913. Applicant's only income £16 per year, and her three children, all married with families, unable to help. Health very bad. Relieved three times, £24. Voted £12 in 12 instalments.—Daughter, aged 56, of M.R.C.S. Eng. who practised at Rotherhithe and died in 1879. Applicant is suffering from chronic glaucoma, which prevents her from working as a nurse. Only income from investments and friends £24 per year. Relieved seven times, £67. Voted £12 in 12 instalments.—Widow, aged 59, of L.R.C.S. Edin. who practised on the West Coast of Africa and died in 1907. Applicant has two sons who are abroad and unable to help and one daughter, aged 36, who is an invalid, lives with her mother. Applicant has recently broken her ankle and is incapacitated from doing any work. Only income a little occasional help from friends. Relieved four times, £48 Voted £12 in 12 instalments.—L.R.C.P. Edin., aged 58, who practised at Old Kirkpatrick, N.B., is suffering from spastic paralysis. Lives with a sister who has to earn a living by taking in boarders. Only income is that given by the Fund. Has one son, aged 19, who is studying for a dentist, and his fees being paid by the Fund and Guild. Relieved 11 times, £132. Voted £12 in 12 instalments.—Widow, aged 56, of L.S.A. Lond. who practised at Islington and died in 1905. Applicant was left with two sons, who helped to keep her. The elder one, however, died in March, 1915, and the other joined the army and has been missing since April, 1915. She is now keeping house for two young nephews. Relieved eight times £128. Voted £18 in 12 instalments.—Daughter, aged 47, of M.D. Edin. who practised at Southampton and died in 1886 Applicant's only income is £25 per annum from a charity and friends, and is suffering from chronic neuritis and quite unable to continue her work as a nurse. Relieved twice, £14. Voted £12 in 12 instalments.—Daughter, aged 71, of M.D. Edin. who practised in Somersetshire. Applicant lost all her income through unfortunate investments. Used to earn a little by painting, but cannot obtain any commission at present. Relieved three times, £42. Voted £3 and referred to the Guild for report.—Widow, aged 66, of L.R.C.P. Edin., who practised at Port Carlisle and died in 1893. Applicant was left quite unprovided for with five children, none of whom are able to help. Has recently had breast removed for cancer and otherwise health very bad. Elected to an annuity of £10 by another charity this year. Relieved twice, £24. Voted £12 in 12 instalments.—Widow, aged 60, of M.R.C.S. Eng. who practised in Liverpool and died in 1895. Applicant is a trained nurse, but in consequence of ill-health is not always able to work. Relieved six times, £42. Voted £12 in 12 instalments.—Daughter, aged 57, of M.R.C.S. Eng. who practised at Hammersmith and died in 1908. Owing to ill-health the applicant is unable to obtain employment. Has no income, but receives occasional gifts of clothes and food from friends, and help from the Guild. Relieved eight times, £104. Voted £18 in 12 instalments.—Widow, aged 54, of M.R.C.S. Eng. who practised in Wiltshire and Devonshire and died in 1914. Applicant was left unprovided for at husband's death, who was an annuitant of the Fund. Receives a little help from friends, but not sufficient to keep her, and unable to obtain suitable work. Relieved three times, £16. Voted £12 in 12 instalments.—Widow, aged 56, of L.S.A. Lond. who practised at Limehouse, E., and died in 1894. Applicant was left unprovided for with two daughters now aged 21 and 23 years, but neither living with their mother, or able to help much. Applicant's health very indifferent and only able to earn a little by needlework. Relieved 10 times. £58. Voted £12 in 12 instalments.—Widow, aged 48, of M.R.C.S. Eng. who practised at Hexham and in London and died in 1908. Applicant dependent on boarders, which is very precarious, and what she can obtain by needlework. Has four step-children, and one daughter of her own who lives with her, but earns very little in consequence of bad sight. Relieved six times, £72. Voted £12 in 12 instalments and referred to the Guild.—Daughter, aged 69, of M.R.C.S. Eng. who practised at Cheltenham and died in 1879. Applicant's health was very bad, suffering from rheumatism and defective sight. Only income, two small annuities, and not quite sufficient to live upon. Relieved twice, £24. Voted £12 in 12 instalments.—Widow, aged 61, of L.R.C.P. Edin who practised in Dublin and died in 1900. Was left unprovided for, but was helped a little by son, who has recently died. Also earns a little by needlework. Health now very indifferent. Relieved three times, £30 Voted £10 in two instalments.—Daughter, aged 69, of M.R.C.S. Eng. who practised in London and died in 1875. For 40 years earned her living as a governess, mainly abroad, and for the last ten years in Russia, and her life's savings were in a bank in Berlin and she has not been able to obtain any of them. Has recently been able to earn a little by sewing, but not enough to live upon. Relieved once, £12. Voted £12 in 12 instalments, and referred to the Guild.—Daughter, aged 60, of M.R.C.S. Eng. who practised in London and died in 1877. Applicant's only certain income a small pension from another charity. Before the war she earned a little by teaching music. Health has been very unsatisfactory of late. Relieved once, £10. Voted £10.

The claims on the Fund show a constant increase month by month. At the last meeting the Committee had a record number of applications and only a balance of £42 to meet them with. Grants were made to the extent of £448. To meet this deficit the reserves, which had already been reduced by £500, will have to be further drawn upon. Unless further support is quickly forthcoming the Committee will have no choice but to restrict its operations, and that in the face of ever-growing claims. Subscriptions may be sent to Dr. Samuel West, the honorary treasurer, at 11, Chandos-street, Cavendish-square, London, W.

NATIONAL HEALTH INSURANCE.

O'Neill v. *Middlesex Insurance Committee.*

IN this action Dr. B. O'Neill asked for an injunction to restrain the defendants from surcharging him £323 in respect of alleged excessive prescribing in his panel practice, and also for a declaration that the defendants were not entitled so to surcharge him, and that Regulations 40 and 51 of the Medical Benefit Regulations were *ultra vires*. The surcharge was originally made upon a report of the Panel Committee and was adopted by the Insurance Committee upon the recommendation of a Subcommittee on March 1st, 1915. Shortly afterwards it had been found that the medical man had not been heard in his own defence by the Panel Committee, as he had a right to be, but had only been before a Subcommittee of the Panel Committee which had held the inquiry on behalf of that body. In order to set this right the Insurance Committee sent the matter back to the Panel Committee for reconsideration and rescinded its own resolution of March 1st. The Panel Committee invited the medical man to appear before it, and this he did but only under protest that the Regulations were illegal and *ultra vires*, and that any report or resolution of the Committee could not be enforced against him, and he refused to answer any questions or to offer any explanation. The plaintiff's solicitors had already taken up on his behalf the position that the Insurance Committee had had the matter before it and was *functus officio* so far as any further consideration of it was concerned. Mr. Justice Rowlatt held as to this that the fact that the questions raised had been fully gone into already did not preclude the Committee from reopening them, and that the second meeting of the Panel Committee could not be called a pretence. As the plaintiff had been invited to attend it and had refused to speak, it could not be said that he had not had a full opportunity to support his own case. On the question whether Regulation 40 was *ultra vires*, his lordship referred to Section 65 of the Act of 1911, which gives the Commissioners power to make rules "generally for carrying this part of the Act into effect." It was obvious, he considered, that the Act did not give unfettered discretion to medical practitioners with regard to prescribing, and that there must be a limit to the amount available, as well as a duty to prescribe reasonably. In order to carry out the Act it was necessary to prevent extravagance in prescribing, and therefore the Regulation being made for this purpose came within the general powers given to the Commissioners for carrying the Act into effect. He gave judgment for the defendant Committee with costs.

Standing Orders for Panel Committees.

The Insurance Commissioners have issued a set of draft standing orders for the assistance of Panel Committees. The draft orders are described by the Commissioners as not necessarily exhaustive and as intended to be amplified or supplemented as may appear desirable. They seem, however, to cover most of the necessary ground, providing in the usual manner for the election of officers and defining their duties, with orders devoted to the procedure at meetings, the procedure in connexion with cases of excessive prescribing, and other matters appropriate to the work of the committees in question.

The Return of Record Cards.

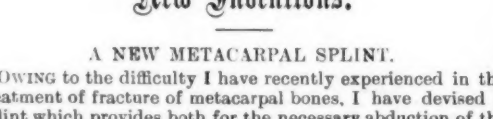
Medical men on the panels have been reminded by circular that the currency of the record cards prepared during 1915 expired on Dec. 31st; consequently the lower halves of such cards have to be sent to the Commissioners not later than Jan. 22nd, and at the same time the upper halves to the Insurance Committee concerned. A good many instructions and warnings as to the making up and forwarding the records in question are contained in the circular, and attention to these should insure accuracy, without which the machinery of the Insurance Acts cannot be expected to run smoothly.

New Inventions.

A NEW METACARPAL SPLINT.

OWING to the difficulty I have recently experienced in the treatment of fracture of metacarpal bones, I have devised a splint which provides both for the necessary abduction of the fingers and extension of the fragments; at the same time it allows a certain degree of mobility and leaves the hand accessible for passive movements and massage from the very beginning of treatment. It consists of two portions—one for the forearm, and the other for the carpus, metacarpus, and phalanges; the former is a shallow trough of galvanised iron shaped to accommodate the flexor aspect of the forearm, and the latter consists of five pieces of 3/16 inch copper wire arranged in such a way as to correspond to the five separated digits. The wire half is fixed to the forearm portion by means of copper nails passed through the proximal ends of the digital wires and hammered out flat on the back of the distal end of the galvanised iron portion. It will be noticed in the accompanying illustrations that the forearm portion has two lateral projections and the purpose of these is to give purchase to bandages which can be passed over them and above the elbow to provide for counter-extension. Extension on the distal fragment of the

FIG. 1.

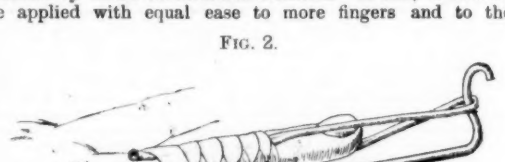


One-seventh natural size.

metacarpal bone is obtained by hooking a piece of rubber tubing attached to the finger or fingers over the extended portion of wire bent to a right angle and curved to accommodate the rubber tubing. I have found that the most comfortable extension for attachment to the finger can be made by laying a piece of ¼ inch rubber tubing along the palmar and dorsal aspects of the finger and very lightly binding it in position with narrow adhesive plaster so that the bent loop of the rubber fits over the distal extremity of the finger; this loop of tubing can be stretched over the upturned end of the copper wire after the splint is bandaged to the forearm.

The illustrations, for which I am indebted to Mr. D. C. Bluett, show the splint as made for the treatment of fracture of the third metacarpal bone of the left hand, and the method by which extension is obtained. It can, of course, be applied with equal ease to more fingers and to the

FIG. 2.



One-half natural size.

thumb. It will be noticed that the rubber extension has a twist in its course from the finger to the extension bar, and this is unavoidable since lateral pressure on the finger is apt to cause pain and congestion on the distal side of the plaster strapping.

The splint can easily be made in a very short time, and the one depicted here was made for me by Mr. F. E. Broodbank of the surgery at St. Thomas's Hospital, and it should be applied so that the attached end of the wires corresponds to the level of the carpus. The fingers which are not involved in the injury can be lightly secured to the corresponding wires by means of a rubber or metal ring, or a turn of bandage.

I have also used this splint with some success in the case of cellulitis of the hand to prevent contraction of the fingers, and for this purpose it may be made to apply to either the dorsal or palmar aspect of the forearm and hand. With very slight modification it might be of value in the treatment of Colles's fracture.

JOSEPH E. ADAMS, M.S. Lond., F.R.C.S. Eng.,
Surgeon in Charge of Out-patients and Children's Department, St. Thomas's Hospital, &c.
Devonshire-place, W.

THE LANCET.

LONDON: SATURDAY, JANUARY 22, 1916.

The Supply of Medical Officers for the Army.

THE adequate supply of medical officers for the army still remains the most urgent professional question of the moment, and the Central Medical War Committee has decided to issue to every practitioner of military age a letter asking him to enrol with the Committee and to come up for service if and when required in the Royal Army Medical Corps or the Royal Navy Medical Service. The letter is published on p. 216. When the applicants for commissions have stated, on forms provided, their name, nationality, date of medical registration, and various particulars with regard to their previous employment, an authorisation to the Central Medical War Committee will enable that body to forward to the War Office the request for a temporary commission in the Royal Army Medical Corps or in the Royal Navy Medical Service, but the applicant will not be called up until, in the opinion of the Central Medical War Committee, the proper time has arrived, and of this one month's notice is promised.

Doubts still remain in the minds of many of our readers—we know it from frequent communications not intended for public reading—which centre round these two questions: 1. Is the civil population deprived of medical service to a dangerous point? 2. Has not the War Office obtained already a sufficient number of medical men for military purposes if a more economical use were made of the supply? With regard to the first question, we have dealt at some length with most of its aspects in recent issues of THE LANCET, but it is possible to speak a little more definitely than hitherto has been permissible. We are glad to believe that the views of the public, of certain local authorities, and of the managers of many charitable institutions have been unduly pessimistic. A shortage of civil medical practitioners is unavoidable, and, indeed, has already occurred, but the consequences can be guarded against. The value of coöperation between the various public bodies concerned and of economy in the matter of medical service is beginning to be appreciated, and the public will find that the present depletion of medical men, which will continue for some time and will perhaps assume an exaggerated form, can be to some extent remedied by self-sacrifice on their part. That the National Health Insurance Commission should be working in harmony with the Central Medical War Committee forms a guarantee that no real disorganisation will take place in the medical care of the public. The Commissioners fully recognising the position have prepared analyses of the medical practitioners in England and Wales, which show the number of general practitioners and other medical men compared with population in each administrative area, and indicate clearly the places where a dangerous dearth of medical men might be found. The actual figures are, at the present moment at any rate, not for publication, but we may say that they have been arrived at with the exercise of every precaution. The practitioners are classified as general practitioners and "others," the latter term implying public officials, resident staffs of hospitals, consultants and specialists, retired practitioners, newly qualified practitioners, and those whose practice appears to be purely dental. All this information has been placed in the hands of the Central War Committee, which was already in possession of the intimate information concerning medical men in different localities of the country furnished by the British Medical Association. It will be seen, therefore, that the Central Medical War Committee is in a good position to come to a fair decision in making calls throughout England and Wales upon the various medical men whose applications for commissions reach them. The calls of the Central Medical War Committee will be made presumably in accordance with the system of classification which has been published, but the circumstances of individual practitioners and the opinion of Local Medical War Committees will be taken into close consideration, and the value of such well-informed inspection of the individual positions of practitioners will be understood.

With regard to the second question, the War Office certainly requires more medical men with the army, but it is not possible for anyone to say exactly what the future demands may amount to; these must be regulated by military exigencies. The number of medical men serving in the army makes it, of course, certain that from various causes there will be a definite wastage. This wastage will increase, inasmuch as a very large number of commissions were granted after March, 1915, but there is a definite understanding that when the Army Medical Department needs more medical officers it will state the number required to the Central Medical War Committee, whose constitution and terms of reference have now been stated in the House of Commons. Then there will fall upon that Committee the responsibility of assisting the Local Medical War Committees to a decision with regard to the calling up in particular localities of particular practitioners; but as it will be fully informed of the position by the National Health Insurance Commissioners also the difficulties and delicacies of making such decisions will greatly disappear. It is hoped that medical men, under 45, when invited to enrol with the Committee will do so promptly, for in this way the recruiting of medical men for the navy and army will remain in medical hands, and the difficulties and inevitable injustices of general conscription may to a great extent be avoided.

The Midwives Act for Scotland.

THE Midwives (Scotland) Act follows in policy and outline the Midwives Act, 1902, which did not extend to Scotland or Ireland, but differs from it through the introduction of details some of which are of importance. To the more prominent of these differences we call attention below. The general policy is maintained of allowing women holding certain specified certificates in midwifery or who have been in practice as midwives to be certified (i.e., enrolled) under the new law, of forbidding all others from using the title "midwife" or any other title implying certification, and of fixing a date (Jan. 1st, 1922) after which no uncertified woman may practise as a midwife for gain. In Section 1 (5) there is an addition qualifying the disability of a midwife as to the granting of certificates by permitting her to grant such as may be required in connexion with maternity benefit by Approved Societies or Insurance Committees. In Section 2 the period of two years within which certification must be sought may be extended by the Central Midwives Board for Scotland to meet the exigencies of special cases of delay.

The Board when fully constituted will consist of 12 members (Section 3), with power to seek certain modifications of its constitution, including increase or diminution of numbers, by representation to the Privy Council and with the consent of Parliament. Of the 12 members mentioned, however, a group of three, who are to be appointed by the Lord President of the Council, will some day include two certified midwives practising in Scotland, "when midwives so qualified are available in sufficient number to warrant such appointment." The number of registered medical practitioners on the Board is fixed at five. These are to be appointed: one by the University Courts of Edinburgh and St. Andrews, conjointly; one by the University Courts of Glasgow and Aberdeen, conjointly; one by the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, conjointly; and two by the Scottish Committee of the British Medical Association. One member of the Board is to be appointed by the Society of Medical Officers of Health of Scotland, who presumably will be a medical practitioner, so that there should be six medical men on the Board, two midwives, and four others who may, or may not, be medical practitioners. The appointers of these four will be: the Lord President of the Council (one); the Association of County Councils for Scotland (one); the Convention of the Royal Burghs of Scotland (one); the Queen Victoria Jubilee Institute for Nurses (Scottish Branch) (one). Meetings of the Board will be held at Edinburgh, reasonable expenses in respect of attendance being paid. Section 5, defining the duties and powers of the Board, provides that it shall appoint examiners, one of whom shall be a registered female medical practitioner and none of whom shall be a member of the Board, the Act of 1902 only stating that the Board is to appoint examiners. Section 5 contains another innovation in the term used to describe the functions of the medical practitioner who is to be summoned when in cases of special difficulty it is clear that the midwife should not deal with the case alone. It will be remembered that by the Act of 1902 and the Regulations framed under it, in cases specified a midwife is to advise that a medical practitioner be sent for, ceasing to treat the case herself, and that no provision is made for the payment of the medical man, who may or may not be called in by those who receive the advice to do so. In the Scottish Act the Board have the duty of (Section 5 (1) (e)) "regulating, supervising, and restricting within due limits the practice of midwives and defining the emergencies in which a midwife shall call in a registered medical practitioner to her assistance." From this it will be seen that the midwife is made directly responsible for obtaining medical help for herself in the performance of her duties, and we quote the section in which the duty is amplified:—

Section 22: (1) In case of an emergency as defined in the rules framed under Section 5 (1) (e) of this Act, a midwife shall call in to her assistance a registered medical practitioner, and the local supervising authority shall pay to such medical practitioner a sufficient fee, with due allowance for mileage, according to a scale to be fixed by the Local Government Board for Scotland, and such fee shall cover one subsequent visit. (2) It shall be a condition of the payment of such fee that the medical practitioner so called in shall state in his claim to the local supervising authority the nature of the emergency. (3) The midwife shall report forthwith to the local supervising authority each case of emergency in which she has called in a registered medical practitioner to her assistance, stating the nature of the emergency and the name of the medical practitioner. (4) The local supervising authority shall have power to recover the fee from the husband or guardian of the patient as an alimentary debt, unless it be shown to their satisfaction that such husband or guardian is unable by reason of poverty to pay such fee.

It will be observed that apparently it is the fee only and not the mileage which the local authority may recover. It is hardly necessary to say how much friction in the working of the Act of 1902 might have been saved if this section had been inserted in, or promptly added to, that statute.

Other features of the Scottish Act are as follows:—Power is given to suspend as an alternative to removal from the roll of midwives, and to pay compensation where suspension has been followed by a decision in the midwife's favour, or has been imposed in order to prevent infection; provision is made for the reciprocal treatment of midwives certified in other parts of His Majesty's Dominions, for the disposal of fees payable for examination or certificate, and for the audit of the Board's accounts; and there is a power of entry for officers of local supervising authorities to premises believed to be lying-in homes, where it is believed that a certified midwife practises or that a woman

not certified practises in contravention of the Act. It is also ordered that the medical officer of every local supervising authority shall report annually to the authority on the administration of the Act, transmitting a copy of his report to the Board and to the Local Government Board for Scotland, and the Board is to present a report of its proceedings annually to the Privy Council. The Midwives (Scotland) Act, 1915, came into force on Jan. 1st, 1916.

Annotations.

"Ne quid nimis."

THE HEALTH OF MUNITION WORKERS.

Memorandum No. 2, submitted by the Health of Munitions Workers' Committee to the Minister of Munitions, deals with those matters outside the ordinary undertakings of factory management which have to be considered if the full efficiency of any factory is to be maintained, and which present difficulties not easily to be overcome in connexion with the vast and rapidly organised munition works now being carried on. The four chief influences affecting industrial efficiency to which the memorandum calls attention are those which raise questions of housing, transit, canteen provision, and the individual welfare of the employee. The sudden influx of workers in certain districts has overtaxed housing conditions beyond any limits that would be tolerated in normal conditions of peace. Railways and other means of transit in many cases cannot provide for the men and women to be carried without imposing upon them overcrowding, waiting, delay, and loss of time; the provision of suitable food in the factories, or in such lodgings as are available for the workers, is only arranged with difficulty and not always with satisfactory results; and those responsible for the organisation of the factories, as such, have their time fully occupied without being able to devote any appreciable part of it to the personal supervision of the individual welfare of their workpeople. To secure improvement in these four important particulars is quite essential if the factory is to be maintained at its highest efficiency, for the good health and content of the workers are necessary to this end. In order to obtain better conditions the recommendation made by the Committee is that "welfare supervision" should be established by those responsible, such as is now receiving the attention of the more enlightened employers, welfare supervision not being a new thing but one the usefulness and desirableness of which have suddenly been rendered conspicuous. The task of the "welfare worker" is no light one, requiring, as it does, experience, if persons so endowed are obtainable, but in any case tact, good sense, understanding of industrial conditions, and sympathy. The memorandum refers to courses of social study, as established at the University of London and the University of Birmingham, comprising lectures and practical work, and designed for persons seeking to qualify themselves for posts as welfare workers, as well as for other similar employment. Assuredly the recommendations of the Committee should secure the support of all who can help to render them effective, and there should be educated men and women of good standing who in this great national emergency will find in work among munition workers fit scope for their energies and their patriotism. No doubt the need for women welfare workers to help where women and girls are employed is the more urgently and generally felt, but the need exists also where the munition workers are men, and particularly where they are boys. For this reason the memorandum to which we have referred should provide interesting and suggestive reading for many who are anxious to help their country, but who as yet have not found the niche best suited to them. The Committee responsible for it, having Sir George Newman as its chairman, includes Sir Thomas Barlow, Bart., Mr. G. Bellhouse (of the Factory Department, Home Office), Professor A. E. Boycott, Mr. J. R. Clynes, Dr. E. L. Collis (Factory Department, Home Office), Dr. W. M. Fletcher, Professor Leonard E. Hill, Mr. S. Osborn (Sheffield), Miss R. E. Squire (Factory Department, Home Office), and Mrs. H. J. Tennant.

"SOLDIER'S HEART."

IN opening the discussion on the soldier's heart at the Section of Therapeutics of the Royal Society of Medicine on Tuesday evening, Sir James Mackenzie dealt with a subject which he has made peculiarly his own, and compressed into a brief half hour a complete account of the subject from a clinical and etiological standpoint. The condition known as "soldier's heart" is best defined by stating what it is not. The life of the trenches is in every way a trying one for the soldier; it finds out his point of least resistance, which may be an impaired heart, serviceable enough for the conditions of his everyday life, but unequal to any severe and prolonged strain. Loss of compensation follows and the ordinary symptoms of heart failure. But this is not the subject of Sir James Mackenzie's address. "Soldier's heart" itself is something quite different, and was first clearly described by American physicians during the Civil War as a form of heart trouble to which soldiers were particularly liable. It is a condition characterised by exhaustion of the circulatory system, shown as regards the heart by breathlessness, a sense of suffocation and præcordial discomfort, and a frequency which if not raised during rest becomes unduly increased on slight exertion. As regards the vessels, the condition is marked by great vaso-motor instability, shown in pallor or flushing of the nose and extremities, attended with giddiness or fainting in the more severe forms. But the symptoms are not confined to the circulatory system, and in 90 per cent. at least of the cases observed this system is not the one primarily affected; the circulatory symptoms are part of a general illness in which the central nervous system has a large share. Apart from the vaso-motor disturbances there is an irritability of temper, a depression of spirits, an inability to concentrate thought, a nervous tension liable to lead to sudden outburst and a tendency to focus the attention constantly on the condition of the heart, which implies a profound influence on the nervous tissues. The condition is reminiscent, indeed, of another condition of nervous exhaustion which has already been described in these columns when dealing with special hospitals for officers with nervous exhaustion. In both class of cases there is a marked disinclination for mental exertion. And there is this in common to the two states: both

are generally the sequel of prolonged strain combined with long periods of sleeplessness, with a severe shock, such as may follow the bursting of a high-explosive shell, as the immediate forerunner. Both, too, when fully developed are attended with much mental distress, which persists for a long time and passes off again very slowly. In the one case the nervous system is probably itself the point of least resistance; in the other the circulatory system has also suffered, whether from the toxic influence of some infection or more directly from strain in the adolescent period, and the great majority of these cases occur in quite young soldiers who have not yet completed their full stature or full internal development. The toxic influence, although not proved as an etiological factor in all cases, has much to answer for, as in a majority of cases there is a history of a period of malaise with slight febrile movement, insufficient, it may be, to occasion invaliding, succeeded after an interval by a second attack of a definitely incapacitating nature. Upon most of these etiological points Sir James Mackenzie touched, but he was careful not to attach any degree of finality to them. His desire is to continue the study of these cases, on a large scale, in a special hospital where accurate diagnosis and classification would be possible. Treatment must follow on rational lines, and where a toxic origin has been established, it must include an attempt to brace up the powers of resistance, to eliminate the toxic products, and to renew the tissues specially affected. One of Sir James Mackenzie's opinions deserves wide attention. Where the condition is one of simple "soldier's heart," absolute rest is not indicated; rest in bed may tend merely to further weaken the cardiac muscle. Appropriate and not excessive exercise is the right treatment both for the heart and the depression of spirits, and may take the form of fishing, riding, and golf for the officers, and suitable games such as bowls, quoits, and skittles for the men. Sir James Mackenzie holds that in the indulgence in exercise, as long as it produces pleasurable feeling and no discomfort, lies the whole philosophy of the therapeutic treatment as far as the heart is concerned.

CASES IN WHICH A POSITIVE WASSERMANN REACTION WAS OBTAINED IN PATIENTS LATER AFFECTED WITH SYPHILIS.

POSITIVE Wassermann reactions are regularly found, not only in syphilis, but in some other protozoal diseases. A positive result is also met with from time to time in patients who are affected with other diseases, but in all of these latter cases the question must arise, Have these patients been affected with syphilis previously so that the positive reaction is due to the syphilis and not to the other condition from which the patient happens to be suffering at the moment? Now it is exceedingly difficult to prove that a patient has not had syphilis, but it occurred to Dr. S. A. Volyansky that as infection with syphilis is a perfect proof that at the time of infection the patient was not affected with syphilis, it might be profitable to trace the subsequent history of these cases with positive Wassermann reactions to see if any of them later became affected with syphilis. Dr. Volyansky has made notes of a number of cases in the Kalinkinsk Hospital, Petrograd, in whom a positive Wassermann reaction was obtained without there being anything in the history or the symptoms to suggest a syphilitic taint, and certain of these cases were admitted some months later with primary sores, so that it may be fairly safely assumed that at the time when they gave positive Wassermann reactions they were not affected with syphilis. In a paper which he has contributed to the Russian *Vrach* he gives details of two of these cases. In one of them, a young woman, who was admitted with scabies, had some indefinite ulceration on the labium minus. A well-marked positive Wassermann reaction was obtained. The patient was treated but without mercury, and she was discharged in a little less than three weeks. Two months later she was admitted with a soft chancre, but eight months later she was again admitted with a hard sore and a syphilitic eruption. In the other case the patient was first admitted with gonorrhœa and a well-marked positive Wassermann reaction was obtained. About six weeks later the patient was readmitted with a hard chancre, from which spirochætæ pallidæ were obtained. Dr. Volyansky promises that at the end of the war he will record all the other cases of the kind with which he has met, and his experiences will certainly be of interest. It will be noted, with regard to the cases already considered, that the persons concerned were extremely likely to suffer from syphilis and therefore it was difficult to be sure that the positive Wassermann reactions were in no way connected with previous attacks.

TENDER FEET AND VERRUCA PLANTARIS.

DURING the continuance of the war, and perhaps now that active recruiting is taking place, it is striking that more is not heard of sound remedies for the cure or alleviation of the minor troubles of the feet. Inasmuch as a very slight lesion or inflammatory reaction of the skin of the foot totally incapacitates a man for exercise, it is of the greatest importance that the foot should be kept as healthy as possible. A large number of persons suffer from slight discomfort of the feet, which alters the gait as to make it at times quite awkward; but relief is not sought, either because it is not known where to apply for it or because the trouble may occur only intermittently—as, for instance, in damp weather. The almost air-tight boot may, of course, play a part in acting as an incubator for micro-organisms, and it is very certain that its inside is in most cases improperly aired. It is therefore necessary to keep the skin of the foot, including the interdigital clefts, eminently clean, and when necessity requires it after the cleaning process it is useful to apply a disinfecting and soothing application, such as a 1 per cent. carbolic acid and glycerine mixture or a two grain to the ounce salicylic acid and glycerine preparation. Glycerine has been stated to modify the action of bacterial ferments and by its application alone in bromidrosis the manifest decomposition of sweat may be completely obviated.[1] Many men have been disqualified by the examining officer for tender feet and corns, and doubtless many others who have gained admission to the army have, after repeated endeavours to overcome their inadequacy in marching, been invalided out from the same cause. An important trouble which is sometimes classified as a corn on the sole or the foot, and which is really a plantar wart or a nest of plantar

[1] T. H. C. Benians: THE LANCET, Dec. 5th, 1914; Brit. Med. Jour., Dec. 18th, 1915.

warts—verruca plantaris—is usually extremely painful and incapacitating, and will often continue to recur after repeated operations for its removal by the knife and other means. Many such cases, however, may be cured by the use of a combination of glycerine, salicylic and carbolic acid. For an average-sized patch the dressing is applied on a piece of lint about as big as a shilling, and oiled silk strapped over it. The paste is made by taking an ounce of glycerine, adding enough salicylic acid to make a thick cream, and then mixing in one drachm of pure carbolic acid. If the patient walk about with this on his foot for a day and re-apply a fresh dressing the next morning it is often possible to peel away an area of thick sodden epidermis with the wart and its hard centre or core at one sitting, but it may be necessary first to apply a hot boric-acid fomentation for a night to soften the area. Removal is best done by beginning at the periphery and peeling up gradually all round towards the central hard core. After this the patient has a slightly tender foot which is usually quite comfortable within 24 hours. The aspect of the area under treatment is sometimes disquieting to the patient, but as long as the application is kept strictly to the warty region no harm need be feared. It is, however, necessary not to permit the paste to reach the delicate ordinary skin, as it may cause an unpleasant form of blistering with subsequent formation of troublesome scar-tissue. Hence it is not desirable to let the patient carry out the treatment on his own behalf.

TYPHOID COEXISTING WITH DIPHTHERIA.

THE coexistence in a patient of typhoid with diphtheria is seldom observed. At a recent meeting of the Société Médicale des Hôpitaux of Paris M. Joltrain stated that during last winter among the soldiers at the front there were epidemics of both diseases which gave rise to many cases of double infection with the typhoid bacillus or the paratyphoid (A or B) and the diphtheria bacillus. In a barracks used as a temporary hospital for one army corps 4000 cases of pure typhoid and 796 cases of pure diphtheria were treated. During a period of eight months 120 cases of typhoid or paratyphoid complicated with diphtheria were discovered, but this figure was below the reality owing to the great difficulty of the clinical diagnosis of diphtheria and the impossibility of bacteriological examination in all the cases. Two distinct epidemics of diphtheria were observed among the typhoid patients at the time when a large number of cases of diphtheria were being treated. The first occurred in December, January, and the early part of February; the second lasted from the beginning of May to July. In investigating the etiology it was found that a certain number of patients admitted to hospital suffering from typhoid were also diphtheria carriers, as was shown by cultures made from their throats. Later they developed diphtheria. In other cases patients suffering from typhoid contracted diphtheria in hospital from an *infirmier* who was a carrier or from a patient the subject of unsuspected diphtheria. From the clinical standpoint three classes could be distinguished: 1. Patients with the complete syndrome of typhoid, cultures from whose throats showed the diphtheria bacillus, but the typhoid did not appear to be modified. 2. Patients suffering from typhoid showed a sore throat with membrane of which the diagnosis was easy. The typhoid was always severe, though among eight cases there was only one death. 3. In the largest class (59) the clinical picture was more complex; examination of the throat did not enable an exact diagnosis to be made. Usually the patients were admitted from the sixth to the tenth day of an attack which differed little from ordinary typhoid. Cultures from the throat revealed the diphtheria bacillus. Detailed comparison with ordinary cases of typhoid showed some symptoms which were suggestive, especially those which could be attributed to the association of toxæmia of diphtheria with septicæmia of typhoid. The temperature curve was more irregular than in typical typhoid, and in some cases the temperature remained stationary for 12 or more days. In some cases at the beginning of convalescence, after the temperature had fallen by lysis, the general condition became worse, and without apparent cause the temperature rose again from normal to 101° or 102° F. A most convincing phenomenon was the fall to normal of a very high temperature, which baths and other methods failed to reduce, after injection of antitoxin. The general appearance of the patient was important. There was great asthenia with facial pallor in 60 per cent. of the cases. Albuminuria was present in 84 per cent., while in typhoid in which cultures from the throat were negative it was present in only 20 per cent. Vomiting—a condition very rare in typhoid in the absence of perforation or gastric ulceration—occurred in 18 cases. The throat was carefully examined. In 10 cases it was simply red. In 12 cases there was œdema of the uvula with an opalescent pellicle on the palate and pillars of the fauces, difficult to distinguish amid the sordes encumbering the whole buccal cavity. In 8 cases there was hoarseness, dysphonia, or aphonia, but the vocal cords showed nothing characteristic of either typhoid or diphtheria. They were simply dry, like the mouth and throat, and sometimes one or both cords were paretic. Thus cultures from the throat remained the criterion. But a positive result in cases of typhoid with a normal course indicates only that the patient is a diphtheria carrier. It is best, however, to prevent possible complications and get rid of the bacilli by prophylactic injections of antitoxin. On the other hand, when the bacteriological examination is negative diphtheria is not excluded with certainty.

THE TREATMENT OF PHTHISIS BY SUN-BATHS.

Dr. W. Holmboe gives a very encouraging account[1] of his experience with the treatment of pulmonary tuberculosis by heliotherapy at Mesnalien Sanatorium in Norway during the year 1915. Mesnalien lies in the open country between the Gudbrandsdal and the Österdal, 1800 feet above sea-level, in about the latitude of the Faroes.[2] The snow lies on the ground there for perhaps eight months of the year, from October to May, and Dr. Holmboe was at first inclined to believe that the climate would be altogether too cold for the sun-bath treatment, for the average temperature in winter is from − 5° to − 10° or − 15° C. Experience has shown him that he was mistaken here, and that the patients can strip and take sun-baths in open verandahs all the

[1] Tidsskr. f. d. Norske Laegeforening. Christiania, 1915, xxxv., 1197.
[2] THE LANCET, May 30th, 1908, p. 1579.

year round at Mesnalien, excepting in December and January, when the sun never rises sufficiently high above the horizon to keep the hardiest of them warm in an air temperature of − 3° C. for more than half an hour. If closed glass-walled verandahs were available the sun-bath treatment could be carried on with advantage all the year round even in this high latitude. Dr. Holmboe gives the sun-baths in the hours usually devoted to rest, and without curtailing the exercise hours; he notes that sun-baths have to be taken in solitude, and that this has the advantage of keeping the patients duly quiet during the rest hours. He remarks that Norway naturally has less sunshine than Switzerland, the country especially famed for heliotherapy, but still has plenty to make the sun-bath treatment worth while; he adds that on cloudy days therapy by radiant light should take the place of the sun-baths, a suggestion already made by Rollier, of Leysin, and carried out in a majority of the Swiss sanatoriums, where a quartz-lamp is considered part of the routine installation. There was comparatively little sunshine at Mesnalien in 1915; during the first 319 days of the year there were only 150 on which sun-baths could be taken; in July there were only seven! But the Norwegian sun is powerful even in winter, and a black-bulb thermometer exposed in vacuo rose as high as 45°–55° C. when placed in the sun in February or March, and to over 40° C. in November. Dr. Holmboe observes that the great enemy of heliotherapy is the wind; he adds that the patients have to wear dark glasses to protect their eyes, and may be allowed to advance to the complete sun-bath at about the ninth exposure, wearing broad-brimmed hats to protect their necks. The maximum daily duration of the baths has been 4½ or 5 hours, in two séances. Only once has he seen any unpleasant effect from sunburn—an erythema; this was accompanied by fever and sore-throat, and may not have been due to the sun at all. His patients generally became much pigmented by the sun's rays. According to Rollier the cutaneous pigmentation is to be regarded as a method of transforming ultra-violet light into light of longer wave-length, which is more penetrating. Reyn, on the other hand, argues that the pigment has the opposite effect of converting the light waves into ultra-violet waves, and he regards it as harmful on the whole, whereas Rollier regards its occurrence as a good sign. Dr. Holmboe has had the same experience with cases of pulmonary tuberculosis as Rollier has had with surgical. He finds that all his patients, without exception, were the better for the sun-bath treatment, which gave them a feeling of well-being and quiet, and facilitated the carrying out of the rest of the treatment. The sun baths never raised the patients' temperatures, but did sometimes produce a temporary quickening of the pulse; they improved the patients' appetite. Dr. Holmboe finds a tendency to hæmoptysis the only contra-indication to heliotherapy in phthisis; fever is not a reason for withholding sun-baths, nor is the fact that a patient may have advanced pulmonary disease. He has been surprised to find how well the treatment has suited all his patients, men and women, blondes and brunettes alike, whether it led to marked cutaneous pigmentation or no. He concludes by praising heliotherapy in phthisis highly; it adds to the comfort and cheerfulness of these victims of a chronic and depressing malady, and is, indeed, the only treatment he has not found to be a disappointment.

THE DEMAND FOR EXPLOSIVES AND THE FOOD AND DRUG SUPPLY.

WAR in its demands comes sternly first. Even certain foods are being sacrificed, it appears, to supply the basis of the high explosive. The only source of glycerine, for example, is the fats, and many fat-yielding commodities are being pressed into service for the sake of the glycerine structure contained in them. The final product is, of course, nitro-glycerine. The increased call for linseed, lard, nuts, and cocoa illustrates the extraordinary hunger going on for the basic principles of explosives, derived from fatty food products. Many, too, of our valuable drugs, and especially the synthetics, are similarly prevented from being economically prepared, since their elaboration is dependent on the use of raw materials, such as benzene, carbolic acid, toluene, all of which have been commandeered for munition service. Recently a memorandum has been issued asking the public not to grumble at the quality of the gas-supply and, further, to use as much gas as possible in order that the gas-makers may get a bigger yield of benzene and toluene. The withdrawal of these two substances from coal-gas depreciates its illuminating power, though that matters little in these days of incandescent mantles, and when the use of the old fish-tail burner has become practically extinct. At one time we depended entirely upon the illuminating value, *per se*, of gas for lighting our houses and streets. Now it does not matter if gas burns with a non-luminous flame; it is so soon and effectively made radiant by putting in its path the rare earth resistance, the incandescing mantle. It is wonderful to reflect what an extraordinary influence upon the world's affairs the producers of gas have shown since their inception of business as providers of an effective method of illumination. They started to make gas for lighting purposes, and incidentally a group of by-products appeared which proved to be the foundation of several most important industries. In due time they began to supply fertilisers for the soil, antiseptics in surgery, remedies in medicine, and dyes for the colour trades. And now, in war their ploughshares have been turned into swords. To take one example, we cannot now make aspirin or the salicylic derivatives in general economically because phenol, which is their starting point, is required for making picric acid, just as the glycerine in certain of our fatty foods is required for making nitro-glycerine. The same is true of many other synthetics, and also of the dyes. There is no difficulty in producing them, but there is a shortage of raw materials consequent upon the first call for their application being the making of munitions. These considerations form one of the many serious outlooks of the war, and we may well pray that this deflection of our raw materials into the service of war may soon cease.

APPENDICITIS WITH THE CÆCUM ON THE LEFT SIDE.

Dr. C. E. Corlette has reported in the *Medical Journal of Australia* the rare condition of appendicitis with the cæcum and ascending colon on the left side. He saw in consultation a man, aged 42, for suspected appendicitis. The temperature was normal and the pulse 96, and there were pain and tenderness referred to McBurney's point, and also a little higher. The pain had begun suddenly 24 hours

previously, and had been severe all night. There had been no vomiting. Appendicitis was diagnosed, and the usual incision was made and the abdomen opened, but the appendix could not be found, nor could the cæcum or ascending colon. The right side of the abdomen was occupied entirely by small intestine. The incision was closed and a median opening made through which the abdomen was explored. The cæcum and ascending colon were found on the left side in contact with the descending colon, the transverse colon and omentum being absent. The appendix was long, swollen, and inflamed, and attached by a long meso-appendix. The cæcum and ascending colon were furnished with a mesentery presenting a free border at the brim of the pelvis and attached along the middle line in front of the vertebral column. The rare anatomical abnormality present would be very disconcerting for an inexperienced operator, and might easily lead to abandonment of the operation with an untouched appendix. It is noteworthy that although the appendix was on the left side both the pain and tenderness were referred to the usual spot on the right side. This Dr. Corlette does not attempt to explain. He has seen many cases of pelvic appendicitis in which the pain and tenderness were diffused in the hypogastric region with little or no localisation at McBurney's point. The October number of *Surgery, Gynecology, and Obstetrics* contains an article by Joseph H. Schrup on "Left-Sided Appendicitis." He describes a case closely resembling the above. There was tenderness over McBurney's point, but at the operation the cæcum and ascending colon were absent from their usual place. The jejunum was coiled up in the right half of the abdomen. The cæcum was on the left side near the sigmoid. A radiogram taken later showed angulation at the splenic flexure and absence of the transverse colon, while the cæcum and ascending colon were in close apposition to the descending colon and sigmoid. Schrup has collected two other cases of similar anomaly recorded a long time ago, one by Cabot of Boston in the *Medical and Surgical Journal* of 1836, and the other by Cluène in the *Journal of Anatomy and Physiology* of 1867.

"LOUPING ILL."

A PAMPHLET published by Messrs. Blackwood and Sons records the investigations of Dr. J. P. McGowan, assistant superintendent of the Laboratory of the Royal College of Physicians of Edinburgh, into the disease in sheep known as "louping ill." There have been several inquiries into the nature of this malady, but nevertheless its causes and pathology seem to have remained somewhat of a closed book. The research in this instance was carried out on behalf of the Edinburgh and East of Scotland College of Agriculture, and the expenses incurred were met from the Development Fund through the Board of Agriculture for Scotland. In acknowledging that the subject of "louping ill" is a very intricate and difficult one the author controverts the idea that the disease is due to ticks, and shows that it occurs on holdings and land where ticks have never existed, especially in cases of low-ground arable farms. He agrees, however, that where the tick is "louping ill" is always worse. "Louping ill," braxy, stomach staggers, and grass sickness are considered to be essentially of the same nature but epidemiologically different. Braxy is the result of a sudden violent chill as a predisposing factor and "louping ill" is ascribed to a less violent one. The cause of the complaint is the bacillus bipolaris septicus ovium, which produces effusion into the pericardial sac and hæmorrhages in the heart muscle, mucosa of the fourth stomach and kidneys, and œdema of the lungs and subcutaneous tissues. Extreme variations of outside temperature, prevalent chiefly in spring and autumn, and improper or poor food-supply render the subjects liable to attack. Lambs sucking an affected ewe may take the disease through her milk, and in them diarrhœa is a pronounced symptom. Shelter from bad weather, separation of ill-thriving lambing ewes, and special feeding are recommended as preventive measures; affected pasture should be burnt, and the administration of a purgative to affected animals and their isolation are advocated as remedial measures. Injections of cultures of the bacillus into rabbits produced typical symptoms of the disease. The investigator does not consider the malady contagious, although recommending isolation, and he points out that cattle take the disease and are affected in the same manner as sheep. Navel ill, the œdema and pyæmia produced by tick bites, and wool ball in the stomach are cited as instances of pseudo-louping ill. In the preparation of this report a circular of questions relating to "louping ill" was addressed to many who had knowledge of the disease and their answers to the questions put were very helpful to the cause of research.

Sir Dyce Duckworth has been elected a Membre Correspondant Étranger of the Académie de Médecine of Paris.

WE regret to record the death, on Jan. 16th, of Dr. Herbert Williams, medical officer of health of the Port of London.

RELEASE OF A MEDICAL MAN IN THE CAMEROONS.—Official notification has been received of the release, on Jan. 8th, of Dr. James Lindsay, of the West African Medical Staff, by a British force from his captivity in the Cameroons. Dr. Lindsay was captured by the Germans shortly after the outbreak of war and interned near Jaunde.

A DOMESTIC ECONOMY EXHIBITION.—On Jan. 17th, at the Institute of Hygiene, Devonshire-street, W., Princess Louise, Duchess of Argyll, opened an exhibition, the object of which is mainly to indicate some of the ways in which waste in the household can be prevented. Her Royal Highness pointed out that although much of the waste in our kitchens is due to carelessness, some must be credited to an ignorance which may be removed by instruction. Sir William Bennett, the President, read an address of welcome. The exhibition will remain open from 12 to 6 until Saturday. To-day (Friday) at 3.30, Dr. J. S. Owens will lecture on Waste in Fuel.

DUNDEE'S LOW BIRTH-RATE AND HIGH DEATH-RATE.—For the year 1915 the birth-rate in Dundee was just over 22 per 1000 inhabitants, compared with 28 per 1000 in 1905, 24·5 in 1913, and 25 in 1914. Previously the falling birth-rate was offset by a falling death-rate. In 1915 this was not so, the surplus of births over deaths being only 165; in the worst of the previous years it was never below 1500. Among children under 1 year of age the proportion of deaths was 210 for every 1000 born. A contributory cause of this high mortality was the occurrence of two severe epidemics of whooping-cough, while measles prevailed in the city in the early part of the year. Whooping-cough also accounted for 336 deaths, causing the heaviest death-rate from whooping-cough known in Dundee. The death-rate from measles, although high, has been exceeded on one or two occasions.

STRETCHERS FOR THE WOUNDED IN THE TRENCHES.

BY G. H. COLT, F.R.C.S. ENG.,
CAPTAIN, R.A.M.C. (T.F.); ASSISTANT SURGEON, ROYAL INFIRMARY, ABERDEEN.

ON August 15th, 1915, I received a letter from Captain D'Arcy Power, R.A.M.C. (S.R.), at the front, in which he says:—

We are in most urgent need of a stretcher for use in the trenches. Although we have all for months past been trying to devise something, all our efforts have failed so far. The communication trenches are very long in certain parts of the line. They are 27 inches wide at the level of the hip and 29 inches wide at the level of the neck. They have no traverses, but they bend about in rather sharp curves and are 6 feet deep. The fire trenches are 19 inches wide at the level of the hip and 25 inches wide at the level of the neck, and are 9 feet deep. They are formed with traverses of 6 feet at intervals of 20 feet, and the chief difficulty is in getting round these—i.e., in turning the corners. The diagonal width across the corner of such a fire trench is 29 inches at the level of the hip and 32 inches at the level of the neck. The regulation stretcher fails utterly, but in a communication trench where there are no traverses, but only bends, the bearers may hold the stretchers at arms' length over their heads. The fire trenches are too deep for this, even if it were safe. My dressing station was situated 800 yards behind the front-line fire trench, and with our present lack of suitable stretchers it took anything from 1½ to 2½ hours to bring a wounded man 800 yards back this distance. Then if it was an urgent case and it was daylight he had to be man-handled down another 800 yards of trench to a village where a motor ambulance was stationed. If the case could wait till dark the ambulance was able to run up to the dressing station and thus save this second 800 yards of carrying, but even in the dark the car was able to get up no further as the road was all shell holes.

Now, after a year of war, and especially after the publication of Captain G. K. Aubrey's article[1] drawing attention to the need of stretchers for the wounded in the trenches, it is unfortunate that more experimental work on the subject has not been published. Such work could only be carried out with difficulty if done on active service, whereas many surgeons at home might be able to design a pattern of stretcher that would prove efficient. Early and quick transport is probably of equal importance as, if not of greater importance than, the application of a field dressing. There is nothing difficult about the manufacture of Aubrey's stretcher. It consists essentially of two poles each 4 feet long. Each is provided with a hinged leg, which when let down enables the stretcher to be balanced while the bearers take a rest. The width of the stretcher when fully expanded is 20½ inches. There are no traverses. The patient sits with his back and head against the chest of the back bearer and his legs hang down.

From the measurements of the fire trenches given in the letter the maximum length diagonally across the convex angle of the corner measured at right angles to the line joining the convex and concave angles is only 4 feet, and this is reduced to 3 feet at a distance of 9 inches from the convex corner. Aubrey's stretcher could not possibly pass round a corner in so small a trench in the ordinary way. Since there are no transverse props in this pattern of stretcher, by compressing it laterally and tilting it sideways or upwards it might be made to pass at the risk of tipping the patient out or of causing him pain. He may be secured, as Aubrey suggests, by a band across the chest. This stretcher was made on the spot, it proved of much service, and several were soon in use in the brigade; but Aubrey had no doubt that it could be improved, and hoped that suggestions to enhance its value would be made by others. In a letter which followed his article, signed "W. J. M. E.,"[2] the suggestion was made to adapt a wheel-barrow for the purpose of negotiating the sharp turns of the spurs thrown out to protect the trench from enfilading fire. "Shallow troughs could be fixed on either side of the wheel, and in these the patient's legs could be laid. Where the bearer company was insufficient to deal with large numbers of the wounded, it would be possible to manage a case with only one bearer." "W. J. M. E." also suggested that when mud and water prevented this method of transport a chair carried on the tilt with lashed poles and side ropes to prevent an insensible patient from falling out could be used.

The measurements of the trenches given above are less than those shown in the sketches in "Field Service Pocket Book, 1913," and no doubt exigencies of service, greater safety, and the nature of the soil demand different measurements in different localities. To be obliged to place men in a trench so narrow that even two unwounded persons could only pass with difficulty and to be unable to provide a quick and efficient means of moving them along it when wounded is unsatisfactory. New trenches also may in some respects be more difficult to traverse than those in which the corners have been worn away. It should be noted that even a small rounding off of the convex angle at any corner makes a relatively large difference in the ease with which a stretcher can negotiate it and adds very little to the risk from enfilade fire. Baying out the concave angle has much less effect as regards ease of movement.

Methods Tried.

The officers and men had tried:—

1. A single pole stretcher with the canvas slung below it by cords like an Indian "doolie" or "dandy." The pole had a joint in the middle, and failure had resulted as no satisfactory joint could be evolved. This was one of the best arrangements tried. The failure of the Indian dandy to negotiate the corners and slopes in mountain warfare is well known.

2. Rogers's stretcher. The poles are 3 feet 6 inches long. Bands for the shoulders are attached to the upper end of the upright portion of the canvas which is thus held up by the front bearer, against whose back the patient leans. As in Aubrey's stretcher the patient sits with his legs hanging down. The length of the seat is 23 inches and the width 18 inches. As a matter of experience it was found that most of the weight came on the front bearer. The stretcher could not be lowered to the ground with a badly wounded man in it, and so the bearers could get no real rest. An unconscious patient was apt to roll off, as the hands of the bearers were fully occupied and there was no room for a third man to hold him on.

3. A chair tied on to two poles and carried with the seat tilted slightly. This arrangement answered well in some cases and was readily improvised. A disadvantage of it that was not mentioned is that when used for a patient with a fractured femur the seat is too short to act as a splint and its front edge may act injuriously so as to cause further displacement of the fragments.

[1] THE LANCET, Dec. 26th, 1914, p. 1488.

[2] THE LANCET, Jan. 2nd, 1915, p. 46.

4. A blanket or ground-sheet carried by the corners. This is in common use, but is often difficult and tiring to manage. For unconscious patients liable to suffocate, for "gassed" patients, and for cases of fracture of the lower limbs this method is most unsuitable. The same objections apply to any stretcher of the hammock type in which no prop is provided to keep the bearers the same distance apart.

It is apparent from the foregoing that the problem is one of some difficulty. Such questions as lightness, the possibility of setting the stretcher down for the bearers to rest, loading and lifting the stretcher, passing men and boxes in the narrow spaces, and above all causing as little pain and injury to the patient as possible, have to be considered. At present the bearers soon get knocked up. The advantage of Aubrey's stretcher over Rogers's is that it has two folding legs which can be let down, and the stretcher is then balanced while the bearers rest. Soft ground must result in difficulty in this respect. Shoulder bands also may be used for the suspension. I am told that any rigid stretcher which has no traverse is tiring for the bearers to manage. In both these types the patient is apt to roll off, and it is a question whether the sitting-up position is a good one for any unconscious patient. In both cases the patient's legs hang down. There is no great disadvantage in that provided they do not knock against uneven ground and are not kicked by the adjacent bearer. If there is a fracture of the leg bones extension will be made by the weight of the limb and the boot. A bayonet or other simple short splint could be lashed to the leg below the knee. The advantage of the position is that the carrying length of the patient is comparatively small. In the trials carried out by us it was found that it was a disadvantage to provide an extension piece to the canvas for supporting the legs and feet because of the varying length of leg in different patients. Such supports are uncomfortable even in the absence of injury, may lead to further injury if a fracture is present, and if made adjustable are apt to be too complicated. A simple stirrup is one of the best of such supports and can be readily improvised by tying on a sling of bandage in the required place. From the illustrations[3] given of a further development of this type of stretcher it would appear that the vertical supporting poles could readily be used for splinting the outer sides of the patient's legs. The ends of such props and the ends of any upward projecting pole or back rest catch in the sides of a trench when the stretcher is tilted sideways.

The "Fowler Position."

Now it seems to me that the Fowler position, or a near approach to it, would be a better one than the sitting-up position. In the case of an unconscious patient there is not the same degree of risk of his falling out and he is more readily controlled if he is restless. For thoracic and abdominal cases, more especially cases of commencing peritonitis, the position is one of the best, if not the best, that could be chosen. For a case of fractured femur it is not by any means bad, because the support lies evenly from the buttocks to the knees, but if the fracture were near the knee-joint it is at present a matter of trial to see how the position answers. For a case of injury to the leg, especially a fracture, as already mentioned, the only disadvantage is the risk of the injured limb being knocked by obstacles or by the adjacent bearer. For cases of severe collapse or shock the position is not the best theoretically, but the speed with which the vascular system adjusts itself to the maintenance of blood pressure, even in severe cases, is often remarkable, and the cause of the collapse may be peritonitis. The Fowler position, especially if maintained by a rigid system, can be quickly reversed so that the head is low and the pelvis high. Some years ago Colonel H. M. W. Gray had constructed for him a rigid tray with canvas floor, after an American pattern, for the purpose of moving patients in the Fowler position from an operation table back to bed in a nursing home where there were one or two awkward corners on the stairs. The patient could by this means be tipped up nearly vertically, and in this way the contrivance readily negotiated the corners. The great advantage of the Fowler position for present purposes is that the carrying length of the patient is seldom greater than 4 feet, and is usually less than this.

The Flexible Method.

Attempts to utilise the position may be made in three ways—viz., the flexible, the semi-rigid, and the rigid. In the first a strip of canvas 5 feet long is taken, and at one end it is fastened to a transverse knee-piece which is suitably curved so as to partially splint the back of each knee and maintain a distance of some 4 inches or more between them.

FIG. 1.

The "Fowler position": flexible method.

At the other end a rounded head-frame is attached and continued down to the shoulders, where a cross-piece, suitably curved so as to be comfortable, is fixed about 12 inches from the top of the head-piece. The shoulder-piece and head-frame are in one piece, so that the traction applied to the top of the shoulder-piece, together with the weight of the patient acting along its lower border, tend to keep the head-piece upright. The length of the finished sling is 4 feet 6 inches, and

[3] THE LANCET, Oct. 23rd, 1915, p. 928.

the width of the knee-piece and shoulder-piece and the canvas stretched between them is 16 inches. This is ample for almost any patient, and less will do, especially at the knee. The edges of the canvas are turned over two side ropes which join up the corresponding ends of the knee- and shoulder-pieces. These ropes are slightly shorter than the length of the canvas so as to give it a transverse bay like the sag of a much used deck-chair or a hammock. The side ropes can be omitted with certain kinds of canvas. To the ends of the shoulder- and knee-pieces webbing shoulder bands are attached by hasps and rings. Fig. 1 gives an idea of the arrangement, and it is apparent that the method is really an improved form of the blanket stretcher. It is certainly more comfortable both for the patient and the bearers than a simple "fore-and-aft" carry. Suitable bands can be added to restrain the patient, the chief situations for these being just below the axillæ and just above the knees. The height of the lowest part of the patient from the ground is about 1 foot 10 inches. No provision has been made in this arrangement for keeping the bearers the same distance apart during transit. The lack of this and the sideways spread of the feet with insufficient room for his legs are the chief objections to this method of carrying a patient. The weight is 5 lb.

The Semi-rigid Method.

In the second or semi-rigid method the part of the stretcher in which the patient reclines is of the type described above. It may conveniently be suspended in two ways. The first is by means of two side poles each 4 feet long, as illustrated in Fig. 2. The poles are attached to the shoulder- and knee-pieces by hasps and swivel rings which can easily be released. Webbing slings may be added for the shoulders of the bearers. A hinged prop may be provided for each pole as in Aubrey's stretcher, so that the apparatus may be balanced on hard ground, and allow the bearers to rest. It seems to me that for simplicity it is better to omit the supporting props and to rely on other relief in this respect. The objection to these props in any short-poled stretcher is that when dependent they catch in the walls of the trench and the feet of the adjacent bearer directly the stretcher is tilted sideways. If the ground is soft they are apt to sink into it. Four small shields could be added near the outer sides of the ends of the handles of any short-poled stretcher so as to prevent the knuckles of the bearers from being scraped by the walls of the trench. This would appear to be a much needed improvement. From the figure it will be seen that the only rigid part of the sling between the poles is the head frame, and the poles may be approximated to this extent when turning a corner. The outside width of the two poles is then only 11 inches. This allows the stretcher to negotiate a right-angled corner in a trench 28 inches wide, but the bearers require practice for this, the patient's feet are apt to catch in the sides of the trench and more weight is thrown on the back than on the front bearer. This stretcher might be regarded as a modified form of Aubrey's, with the substitution of the Fowler for the sitting-up position, with a reduction in width of 4½ inches, and with the addition of traverses. It folds up for packing. The weight of the apparatus complete is 11 lb. In any stretcher of this type it is difficult to reduce the efficient length of the poles below 4 feet. This leaves barely sufficient room for the patient's legs, even if the front bearer were to manage to walk quite evenly. The lowest part of the patient is only 10 inches off the ground.

FIG. 2.

The "Fowler position": semi-rigid method.

In the second form of stretcher of the semi-rigid type the suspension is from a jointed pole, as shown in Fig. 3. The pole proper is of larch, the yokes of sarch, a wood of the willow type, tough and light. This avoids any risk of the yoke splitting across the ends, but if the yokes were made of bent wood, as would probably be the case in manufacture, there would be no necessity to use sarch. The suspension is by ropes with hasp and eye attachment. The pole is divided into two parts which engage at the central joint. This is conveniently effected by a simple nut and bolt allowing movement in a horizontal plane. Now it is found that directly even a slight displacement occurs at the joint, forces come into play which cause a couple to act the moment of which about the joint tends to increase the displacement, the condition being one of unstable equilibrium. Unless some kind of stop were provided disaster would follow, the pole collapsing completely. In the course of the experiments one of the journeymen carpenters solved this part of the problem after a few trials. It is by far the most important part of the matter. He provided a lever and handle situated above the pole. This addition results in complete control of the joint, and is in itself a very beautiful piece of mechanics. The front end of the lever is fixed to the front part of the pole, the fulcrum is at the joint, and the handle moves free. The back bearer by moving the handle determines the exact degree of bend at the joint and restores the same as required. By suitably pressing on the handle in an upward direction he is able to prevent any tendency that he feels may exist for the joint to collapse. When the pole is straight the handle of the lever can be locked to the back part by a hasp, so that the pole is held rigid and the hands of the back bearer are freed. For certain special cases, such as the use of the stretcher on spiral staircases, a side extension bar may be affixed so as

to engage the handle by stops and so enable the two parts of the pole to be locked at any required angle. This bar is not illustrated. To utilise the theoretical advantages of the lever fully the forward end should be attached at a point distant from the joint equal to one-sixth part of the length of the pole and the handle should be one-third of this distance from the joint; but in actual practice both these measurements may be departed from without much loss of efficiency, and as regards the handle end of the lever with some degree of gain because a shorter handle is less likely to scrape against the side of the trench. It is to be noted that in turning a corner the handle projects towards the concave angle of the trench while the stretcher negotiates the convex angle. One great advantage of this type of stretcher is that other men in the trench are able with care to step around and pass it. In an early pattern of this type, since discarded, the yokes were borne on the shoulders of the bearers. The great disadvantages of this system were the difficulty of raising the yokes on to the shoulders of the bearers and the excessive strain thrown on the back bearer. He had to resist the tendency to deformation of the pole, and in this position this might be very hard work indeed. The front bearer was subjected to pressure on the two shoulders alternately, according to the direction of turning. The fact, however, remains as a result of trials, that this type of stretcher with the pole 6 ft. 3 in. long over all, and the yokes 12½ in. wide outside measure, could just be made to pass round the corners in a trench 28 in. wide and one in which the convex corners are sharply cut. As already mentioned, if these corners are rounded off slightly the ease of passing them is largely increased.

FIG. 3.

The "Fowler position": suspension from a jointed pole.

In order to try to overcome the great strain on the bearers and the other disadvantages of the earlier pattern, the suspension shown in Fig. 3 was designed. In this the yokes of the pole are suspended from the shoulders of the bearers so as to be level with the lower part of their chests, which they fit fairly closely. They may also be held in the hands. At times, notably on a straight stretch, the bearers trust the weight to the shoulder slings entirely. The lever in this case is worked by pulling from above it instead of by pushing it from below, and the back bearer may have two hands free for this purpose. The distance of the patient from the ground being less than when the yokes are carried on the shoulders the consequences for all three are not likely to be so serious should any accident happen, but the patient is more likely to become soiled by mud. The weight is more evenly distributed between the bearers, but the front bearer is purposely given more than the back one. This method of suspension is a great improvement on the last and the strain on the bearers is considerably less. The apparatus, in fact, becomes a manageable thing. The over-all length is 5 feet and the outside width of the front or larger of the two body girdles 15 inches. The total weight is 23 lb. There is no doubt that this could be reduced to 18 lb. and possibly less with safety to the patient. The lowest part of the patient is about 16 inches off the ground. The stretcher can be loaded and will pass round right-angled corners in a trench 18 inches wide. During his transit in such a narrow trench the patient scrapes the corner. If conscious and able to use his arms he can assist by pushing himself away from it. In a wider trench this would not be necessary. The increased ease of movement is marked and there is just room for the patient's legs. Throwing more weight on the front than on the back bearer compensates the latter for his exertion in working the lever and enables him to keep a good look-out. A disadvantage of carrying the patient backwards is that the back bearer has no means of controlling him if he is unconscious. The assistance of a third man is required in hasping up the bar to the shoulder-straps of the bearers and in releasing them, but otherwise two bearers can manage alone. In a winding trench 20 inches wide having no sharp corners but merely sharp bends there is very little difficulty in walking quickly with a patient slung as here described. In a cornered trench 22 inches wide there is not much difficulty, and in one 24 inches wide the bearers can walk quickly with ease. No short-poled stretcher yet designed can be made to negotiate a corner with comfort to the patient and ease to the bearers in a trench 26 inches wide.

The question arises as to how the patient is to be placed in a stretcher of this type. No doubt much will depend on circumstances. Probably the patient will be carried to the nearest spot where the trench widens out, and then lifted into the sling. In other cases it may be more convenient, especially if the bottom of the trench is dry and there is room to move a little, to unhasp and spread the canvas on the floor of the trench and lift the patient lengthwise, or lift or roll him sideways on to it. In doing this the important point to remember is to place the knee-piece directly under the knees, the rest is self-adjusting as regards length. The head-end of the canvas is placed in the direction

of transit. Then, if necessary, the restraining bands will be adjusted, the bearers will take up position and stoop down, holding the yokes while a third man fits the hasps to the eyelets of the canvas. The back bearer will lock the lever.

FIG. 4.

True shoulder suspension.

The stretcher will then be lifted and hasped on to the shoulder-slings. In certain cases the patient's head will be turned on one side and bandaged or strapped to the headpiece. In other cases, one or both of his feet will be placed on the chest or shoulders of the back bearer and a long splint applied from the hip. The back bearer will unlock the lever and the party move off.

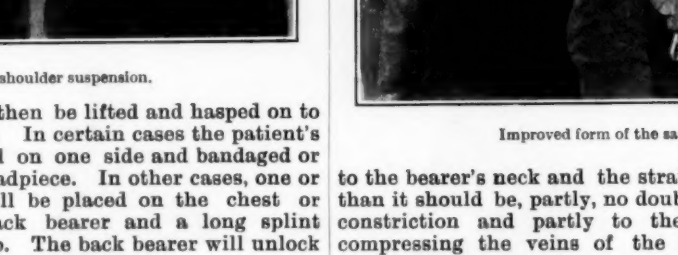
The bearers could obtain rest either by working in relay stages or by providing at intervals poles with a fork or crutch at the top in which the bearing pole could be balanced and the canvas kept off the ground. If there should happen to be a convenient dug-out or other ledge, the sling can be swung sideways and set down on it. The soldiers would always offer a hand for temporary relief. With this type of suspension the bearers cannot set down a heavy patient unaided on to the ground on which they are walking, and even with a light patient there is a strain on the knees when attempting to do this. On the return journey other bearers could easily carry a 10 stone weight of food and ammunition for distribution along the fire trenches.

The regulation method of so-called shoulder suspension is by a band of webbing as shown in Figs. 1 and 2. In actual practice, especially during lifting and setting down, this becomes raised up on to the bearer's neck and the strain is much greater than it should be, partly, no doubt, owing to actual constriction and partly to the muscular effort compressing the veins of the neck and leading to retention of waste products in the muscles. The true shoulder suspension illustrated in Fig. 4 is a great improvement, bringing as it does the weight direct on the shoulders and removing it entirely from the neck. In the short suspension required for the jointed-pole stretcher a difficulty is to obtain arm-hole room, and in the case of the actual collar illustrated the bearer has some little difficulty in adjusting the collar himself. These objections can be got over by omitting the horizontal back band, lengthening the webbing, crossing the two ends over the back and carrying them round to join the front pieces under the opposite axillæ, as shown in Fig. 5. This pattern also is more easily constructed. In a longer type of webbing suspension these difficulties do not arise, and it would be a humane thing if some such

FIG. 5.

Improved form of the same.

FIG. 6.



The "Fowler position": the rigid method.

shoulder collar as described were substituted for the regulation band now in use. The bearers would not get knocked up nearly so much; in fact, the total gain considered over the whole front after an action would be considerable. Without this improvement the jointed-pole stretcher would not have come to fruition, whereas at the present time it would appear to be the only stretcher that will efficiently accomplish its purpose in fire trenches 18 inches to 26 inches wide.

In the stretchers described the sling in which the patient is placed is distinctly comfortable to recline in, and the feeling is one of even support for the whole of the body with the exception of the lower part of the legs.

The Rigid Method.

In the third or rigid method of using the Fowler position the suggestion already referred to, to employ a modified wheelbarrow, has been carried out. Fig. 6 shows one of the experimental pieces of apparatus, which in this instance has been made of cycle tubing and sheet metal. It is 4 ft. 6 in. long, 15 in. wide, and weighs without the under-carriage 25 lb. When carried it will just negotiate a right-angled corner in a trench 29 inches wide, and when wheeled it will pass in one 26 inches wide. By reason of its shape the tray portion is a complete natural splint for the head, neck, body, and lower limbs. It may be carried tilted up, horizontally, or tilted down, and could be swung nearly vertically over the side of a ship or down the shaft of a mine with scarcely any disturbance of a strapped-in patient. The under-carriage for the wheel or wheels can be made detachable, and if conditions for wheeling were suitable it could be left on the return journey at the end of the communication trench ready to be utilised for running the next case along, but if preferred it could be hooked on at the back. In order to lessen the load on the back bearer when wheeling the stretcher the axle should be set far back, nearly under the patient's centre of gravity, but unless the height of the axle off the ground is increased this setting back decreases the efficiency in turning a corner. Setting the axle well forwards increases this efficiency by reducing the turning length, but it would appear to be unlikely that this length between perpendiculars can be reduced below 3 ft. 2 in., in which case such a stretcher could just be made to scrape round a corner in a trench 22 inches wide. In some trenches illustrated in the weekly papers there is a false bottom of planks under which the water lies. In these trenches the use of this pattern of stretcher might be found to be a quick and easy means of moving a patient. It is also probable that when perfected it would answer for general transport work, but not necessarily for lying down cases when deposited in casualty clearing stations or ambulance vans. The manufactured article would be a simple tray of metal stamped in one piece and rimmed up with light tubing. After removing the under-carriage such stretchers could be packed up like saucers one on the top of the other, and so be made easily portable for use in quantity. In civil work, and perhaps in some forms of military work, four wheels would be used with this form of stretcher. Owing to the difficulties of obtaining materials and labour, the further experiments with this type of stretcher are likely to take a considerable time. I therefore thought it best to publish this article now instead of waiting for their completion so that others may be able to assist.

The photographs from which the illustrations have been made were taken by Messrs. G. and W. Morgan, of Aberdeen, who have spared neither pains nor experience to illustrate the details. In carrying out the designs and trials, the help and suggestion of numerous friends have been invaluable, and I take this opportunity of offering them my grateful thanks. There is little doubt that others will already have thought of and tried some of the general designs, especially the more simple ones, indicated in this article, and in this respect I particularly do not wish to claim priority. The matter seemed to me to be an important one, and as such to be deserving of attention. I hope that the general outline given of this particular part of the subject—viz., the utilisation of the Fowler position for carrying patients in stretcher work—may help towards a practical solution of the problem.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Vital Statistics in Canada.

ONTARIO has probably the best system of registration of any of the provinces of Canada, as regards births, marriages, and deaths. It has been registering for over 45 years, but it is claimed that one in every five births escapes registration. Canada is said to be very far behind other British Overseas Dominions in regard to the compilation of vital statistics; and if the above statement is correct—and there seems to be no doubt of it as it comes from a responsible source—then the other provinces of Canada which are not up to the standard of Ontario in health matters must have a very nominal vital statistics department.

An Important Legal Decision.

An action was recently brought against a Canadian general practitioner. The plaintiff was a woman who consulted her physician about a lump in her breast. The physician, at the time of the examination, detected a lump in the other breast as well. A surgeon was consulted and the first breast was removed. At the operation, and while the patient was still under the anæsthetic, the physician told the surgeon there was a lump in the other breast and that he had secured the patient's consent to the removal of both lumps. The double operation was done. Some time later trouble arose in the arm corresponding to the second operation. An action was brought against the surgeon for assault, the patient claiming that he had not had her consent to the double operation. The case came to trial, and there was a conflict of evidence between the patient and her physician, the latter claiming that the patient had given to him her consent for the removal of the second breast. Having heard a considerable amount of evidence in the case, the justice held that a surgeon is justified in performing an operation additional to the original one where the case demands that more be done than was at first considered proper. A surgeon might, in fact, be open to blame if he failed to perform a second operation where he found such necessary for the cure of the patient.

The Universities, the Medical Council, and the Ontario Medical Commission.

President Falconer, of the University of Toronto, appeared before the Ontario Medical Commission, which is inquiring into the regulation of medical practice in that province, and stated that dual control of examinations by the universities and the Medical Council was humiliating. He contended that once a student of medicine got his degree he should be entitled to practise. At present the degree of the University of Toronto was at a disadvantage throughout the empire. The Ontario Medical Council did not recognise it, consequently it could not be recognised by the General Medical Council of Great Britain. The Ontario Medical Council now has the legal right to set the course of the University curriculum. A few years ago it gave up holding primary examinations, but retained the final examinations. Counsel for the Medical Council of Ontario held that the final examination by the Council was necessary in order to show that after his five years' tuition at the University the student was really efficient to practise. The Council, whilst admitting that the medical student has undergone satisfactory academic training, has no means of confirming this other than by examination. Thus the universities and the Council are pulling against each other before the Commission. The universities wish for full control over examinations, thus relegating to the Medical Council a purely disciplinary function over the profession in the province.

Free Serums for Ontario.

The Ontario Board of Health has undertaken to supply free practically all the serums of different kinds used in that province. The annual saving to the people will run into tens of thousands of dollars. Of diphtheria antitoxin alone it is expected that 150,000 to 200,000 doses will be needed per annum and about 500,000 doses of antityphoid vaccine. The latter has already been supplied gratis to the troops of the whole Dominion of Canada, as well as to those of Newfoundland. One circumstance largely responsible for the adoption of this principle by the Board of Health was the observation of the results of the gratuitous distribution of diphtheria antitoxin in Toronto. The general death-rate in Toronto from diphtheria is 16 per cent., while in the Toronto Isolation Hospital, where the severest cases are generally found, the death-rate was only 6 per cent. In the hospital the serum was supplied free and in large doses. Last year the Board of Health was able to supply diphtheritic serum at a quarter of its original price, and this has paved the way for the general manufacture of serums by the province.

Toronto, Jan. 4th.

CENTENARIANS.—Mrs. Mary Paige, of Albany-road, Rochester, has celebrated the 100th anniversary of her birthday, and has received a congratulatory letter from the King. She was born at Launceston, Cornwall.—The death is announced of Mrs. Rebecca Law, an inmate of Saffron Walden Union, at the age of 102. She was in possession of all her faculties.

DONATIONS AND BEQUESTS.—The Aberdeen Royal Infirmary has benefited to the amount of £700 under the will of the late Mr. Alexander Fitchet, of Carnoustie. The sum is to be paid free of duty.—Cardiff Hospital has recently benefited by an anonymous gift of 10,000 guineas towards the cost of new extensions, and by a donation of 1000 guineas to endow a bed by Messrs. Watts, Watts, and Co., coalowners. The hospital has received four gifts of a like amount from various donors during last December.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been entered as Surgeons for temporary service in His Majesty's Fleet:—Dated Jan. 12th: Robert Aitken and Samuel Parker Mort.

ARMY MEDICAL SERVICE.

Lieutenant-Colonel Joseph F. M. Kelly to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division (dated Dec. 7th).

Major William M. B. Sparkes to be temporary Lieutenant-Colonel whilst Acting Assistant Director of Medical Services of a Division (dated Nov. 20th).

ROYAL ARMY MEDICAL CORPS.

Temporary Major Charles S. Myers to be temporary Lieutenant-Colonel (dated Jan. 18th).

Temporary Captain Robert J. D. Irvine to be temporary Major (dated Jan. 14th).

Temporary Lieutenant William J. G. Gayton to be temporary Captain (dated Dec. 7th).

Temporary Lieutenant Norman K. Wilson to be temporary Captain (dated Jan. 15th).

Temporary Honorary Lieutenant Angelo M. Crabtree relinquishes his commission on ceasing to serve with the New Zealand War Contingent Hospital (dated Jan. 3rd).

The undermentioned to be temporary Lieutenants:—

Dated Dec. 27th: Evan Parry Evans.

Dated Dec. 28th: Joseph Chamney Atkinson Ridgway, Helton Godwin Baynes, Henry Currie Watson, Frederick George Thomson, Henry Stewart, John Patrick O'Connor, James Dewar Robertson, Henry Catling, and Selwyn Langstaff Haslett.

Dated Dec. 29th: Hubert Sewell Sims and Reginald Mark Moore.

Temporary Lieutenant-Colonel Leonard S. Dudgeon relinquishes his commission (dated Dec. 27th).

Temporary Captain Charles N. Binney relinquishes his commission (dated Dec. 10th).

The undermentioned temporary Lieutenants relinquish their commissions:—

Dated Oct. 24th: John W. O'Farrell.

Dated Nov. 1st: James W. Richardson.

Dated Nov. 2nd: Francis K. Kerr.

Dated Nov. 10th: Denis G. Halsted.

Dated Nov. 17th: Maurice C. Turiansky.

Dated Dec. 1st: Charles W. Hamilton, Joseph E. Barnes, Ricardo Cope, Arthur N. Leeming, Joseph G. Macqueen, Andrew T. Ross, John F. Gibbons, William J. F. Mayne, Mackenzie Douglas, and John C. L. Day.

Dated Dec. 4th: Reginald W. Clark, John G. McDougall, William G. Helsby, and James Potter.

Dated Dec. 7th: Charles C. Holman, Vynne Borland, John C. McConaghey, Roderick A. Campbell, and Hans Fleming.

Dated Dec. 10th: Wilfred H. W. Attlee and Allan R. Wilson.

Dated Dec. 14th: John Anderson, Richard T. Worthington, and Walter J. Harper.

Dated Dec. 15th: William F. Dunlop, Horace E. H. Tracy, George B. Horrocks, and George J. B. Candler-Hope.

Dated Dec. 16th: William Readman, Charles T. Bishop, Ernest G. Wheat, John Duffin, Edward H. A. Pask, and Douglas Elder.

Dated Dec. 17th: Bertram M. Bone.

Dated Dec. 18th: William McH. Binning and George R. Phillips.

Dated Dec. 28th: Michael Sullivan, John H. Douglas, Sylvester D. Fairweather, and Herbert D. Robertson.

Dated Dec. 30th: Richard E. Sedgwick and William Taylor.

Dated Jan. 16th: Randal MacCarthy.

Overseas Contingents.

The British West Indies Regiment.

Albert James Clarke to be Surgeon-Captain (dated Sept. 18th).

The undermentioned to be Surgeon-Lieutenants:—

Dated Sept. 19th: William Steele Mitchell.

Dated Nov. 8th: Aldington George Curphey.

Canadian Army Medical Corps.

Major E. B. O'Reilly, Canadian Militia, to be temporary Major (dated Dec. 22nd).

Captain C. D. H. McAlpine to be temporary Major (dated Oct. 28th).

E. Goulden to be temporary Captain (dated Dec. 4th).

The undermentioned Lieutenants to be temporary Lieutenants:—

Dated Dec. 18th: Harold Ernest Brown, Farrent Lismere Hill, William Arthur Rupert Michell, James Henry Egbert, Theodore George Harwood Drake, Maurice Aloysius Kenny.

TERRITORIAL FORCE.

Royal Army Medical Corps.

South-Western Mounted Brigade Field Ambulance: Lieutenant Wilfred S. Soden to be Captain.

Home Counties Field Ambulance: Lieutenant George Hislop to be Captain.

West Lancashire Field Ambulance: Captain James Wood to be temporary Major. Norman Stuart Jeffrey (late Captain, the King's Own (Royal Lancaster Regiment)) to be Captain.

London (City of London) Field Ambulance: Joseph Howell Lloyd to be Lieutenant.

Wessex Field Ambulance: Captain Arthur C. Hincks to be Captain.

Northern General Hospital: Captain Colin Mearns, from Northumbrian Casualty Clearing Station, to be Captain. Major Albert S. F. Leyton is seconded. Captain Graham S. Simpson is seconded whilst holding a temporary commission as Major in the Royal Army Medical Corps. The undermentioned are seconded: Major Arthur J. Hall, Major Albert E. Naish, Captain William H. Nutt, and Captain Frank A. Hepworth. The undermentioned Lieutenants to be Captains: John Stokes, William W. N. King, and Theodore Allen.

London Sanitary Company: The undermentioned Lieutenants to be Captains: James E. Wilson, Cuthbert E. C. Ferrey, Walter D. Carruthers, Archibald Romanes, Colin C. Frye, Harry G. A. Pearson, and George S. Hoffman. Captain Herbert Beeney is placed temporarily on the retired pay list on account of ill-health. Charles Herbert Lilley to be Lieutenant.

London Casualty Clearing Station: The undermentioned Lieutenants to be Captains: Allan C. Pearson and John C. W. Methven.

Northumbrian Casualty Clearing Station: Captain Frederick John Nattrass, from Northern General Hospital, to be Captain.

Welsh Border Mounted Brigade Field Ambulance: Lieutenant (temporary Captain) Robert Francis Gerrard to be Captain.

East Anglian Field Ambulance: Major William J. Caie relinquishes his commission on account of ill-health.

Wessex Casualty Clearing Station: Captain Alfred Coleridge, from Attached to Units other than Medical Units, to be Captain.

London (City of London) Sanitary Company: The undermentioned to be Lieutenants: Wilfred Samuel Hamilton Campbell, Corporal Norman Shirley Golding (from Canadian Expeditionary Force), William Alexander Francis Balfour Browne, and Alfred Reid.

West Lancashire Divisional Sanitary Section: Lieutenant William H. Hill, from London Sanitary Company, to be Lieutenant.

Supernumerary for Service with the Officers Training Corps.—Lieutenant Wynfrid L. H. Duckworth to be temporary Captain whilst serving with the Medical Unit of the Cambridge University Contingent, Senior Division, Officers Training Corps. Arthur Wyndowe Willert Baker to be Lieutenant for service with the Medical Unit of the Dublin University Contingent, Senior Division, Officers Training Corps.

Attached to Units other than Medical Units.—Surgeon-Major Robert B. Purves, from the Lincolnshire Yeomanry, to be Major. Captain Herbert E. Murray relinquishes his commission on appointment to the Indian Medical Service. To be Captains: Lieutenant John Wood and Lieutenant Alexander Silbermann. To be Lieutenants: William Henry Buckley, John Livingston Hamilton, and Frederick Joshua Page Saunders.

Lieutenant-Colonel A. D. Sharp, C.M.G., has been appointed Assistant Director of Medical Services to the 49th (West Riding) Division, B.E.F.

PLYMOUTH HOSPITAL SUNDAY FUND.—At a recent meeting of the committee of this Fund the sum of £658 was allocated to eight local hospitals and dispensaries.

DEATH OF MR. REGINALD KŒTTLITZ, J.P.—The death is announced from Somerset East, Cape Province, South Africa, where he lived, of Mr. R. Kœttlitz, senior surgeon with Captain Scott's Antarctic Expedition on board the *Discovery*. Mr. Kœttlitz, who received his medical education at Guy's Hospital, was a born wanderer. Previous to his voyage in the *Discovery*, he acted as medical officer to the Jackson-Harmsworth Polar Expedition to Franz-Josef Land, and afterwards accompanied expeditions to Abyssinia, Somaliland, and Brazil. His services to the Scott Expedition were greatly appreciated, and the Kœttlitz Glacier was named in his honour.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7665 births and 4850 deaths were registered during the week ended Saturday, Jan. 15th. The annual rate of mortality in these towns, which had been 14·9, 16·6, and 14·3 per 1000 in the three preceding weeks, fell in the week under notice to 13·9 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of the year 1914. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 15·5, against a corresponding rate of 16·2 per 1000 in London. The death-rate last week ranged from 6·8 in Southend-on-Sea, 8·2 in Bath, 8·6 in Ilford, 8·7 in Wolverhampton, and 8·9 in Swindon, to 19·0 in Middlesbrough, 19·8 in Barrow-in-Furness, 19·9 in Walsall, 20·1 in Dudley, 20·3 in Barnsley, and 21·5 in Stockport.

The 4850 deaths from all causes were 140 fewer than the number in the previous week, and included 329 which were referred to the principal epidemic diseases, against 355 and 312 in the two preceding weeks. Of these 329 deaths, 84 resulted from diphtheria, 78 from whooping-cough, 75 from measles, 60 from infantile diarrhœal diseases, 23 from scarlet fever, and 9 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·0, or 0·1 per 1000 higher than in the previous week. The deaths attributed to diphtheria, which had been 61, 79, and 61 in the three preceding weeks, rose to 84, and included 19 in London, 4 in Liverpool, and 3 each in Hornsey, Portsmouth, Birmingham, Sheffield, and South Shields. The deaths referred to whooping-cough, which had been 69, 60, and 57 in the three preceding weeks, rose to 78, of which 15 were registered in London, 8 in Liverpool, 6 in West Ham, and 5 each in Willesden and Sheffield. The fatal cases of measles, which had been 84, 100, and 81 in the three preceding weeks, further fell to 75; the highest annual death-rates from this disease were 1·4 in Bristol, 1·7 in Exeter and Stockport, and 2·5 in Leicester. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 68, 80, and 73 in the three preceding weeks, further fell to 60, and included 20 in London and 4 each in Manchester and Middlesbrough. The deaths referred to scarlet fever, which had been 28, 22, and 30 in the three preceding weeks, fell to 23, of which 7 occurred in London and 2 in Stoke-on-Trent. The fatal cases of enteric fever, which had been 9, 14, and 10 in the three preceding weeks, numbered 9, and included 3 in London and 2 in Tynemouth.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 2462, 2464, and 2325 at the end of the three preceding weeks, fell to 2224 on Saturday last; 244 new cases were admitted during the week, against 206, 254, and 225 in the three preceding weeks. These hospitals also contained on Saturday last 1476 cases of diphtheria, 59 of enteric fever, 59 of measles, and 14 of whooping-cough, but not one of small-pox. The 1161 deaths from all causes in London were 8 in excess of the number in the previous week, and corresponded to an annual death-rate of 13·4 per 1000. The deaths referred to diseases of the respiratory system, which had been 329, 346, and 246 in the three preceding weeks, rose to 264 in the week under notice, but were 208 below the number registered in the corresponding week of last year.

Of the 4850 deaths from all causes in the 96 towns, 183 resulted from different forms of violence and 395 were the subject of coroners' inquests, while 1394 occurred in public institutions. The causes of 37, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, Bradford, Hull, and in 73 other smaller towns. Of the 37 uncertified causes, 8 were registered in Birmingham, 6 in Liverpool, 3 each in Manchester and Tynemouth, and 2 each in Bootle, Preston, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,355,300 persons at the middle of this year, 1091 births and 696 deaths were registered during the week ended Saturday, Jan. 15th. The annual rate of mortality in these towns, which had been 17·0, 17·4, and 15·9 per 1000 in the three preceding weeks, fell to 15·4 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 17·9, against a corresponding rate of 15·5 per 1000 in the large English towns. The death-rate during the week ranged from 6·2 in Motherwell, 9·1 in Clydebank, and 12·7 in Leith, to 19·5 in Coatbridge, 21·5 in Greenock, and 22·9 in Kirkcaldy.

The 696 deaths from all causes were 23 fewer than the number in the previous week, and included 66 which were referred to the principal epidemic diseases, against 74 and 72 in the two preceding weeks. Of these 66 deaths, 23 resulted from measles, 13 each from diphtheria and infantile diarrhœal diseases, 11 from scarlet fever, 5 from whooping-cough, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·5, against a corresponding rate of 1·0 per 1000 in the large English towns. The deaths attributed to measles, which had been 16, 26, and 17 in the three preceding weeks, rose to 23, and included 7 in Glasgow, 6 in Greenock, 4 in Edinburgh, and 3 in Hamilton. The deaths referred to diphtheria, which had been 8, 11, and 19 in the three preceding weeks, fell to 13, of which 5 were registered in Glasgow, 3 in Edinburgh, and 2 in Paisley. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 11, 11, and 10 in the three preceding weeks, rose to 13, and included 7 in Glasgow. The deaths attributed to scarlet fever, which had been 12, 21, and 18 in the three preceding weeks, fell to 11, and comprised 7 in Glasgow, 3 in Edinburgh, and 1 in Paisley. Of the 5 deaths from whooping-cough, which were slightly in excess of the average in recent weeks, 3 were registered in Glasgow. The fatal case of enteric fever was recorded in Edinburgh.

The deaths referred to diseases of the respiratory system, which had declined from 322 to 139 in the seven preceding weeks, further fell to 114 in the week under notice, and were 161 below the number registered in the corresponding week of last year. The deaths from violence numbered 33, against 32 and 42 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 19 town districts of Ireland, with populations exceeding 10,000 persons at the last Census, 573 births and 463 deaths were registered during the week ended Saturday, Jan. 8th. The annual rate of mortality in these towns, which had been 22·4, 17·3, and 24·2 per 1000 in the three preceding weeks, fell in the week under notice to 21·0 per 1000 of their aggregate population estimated at 1,148,468 persons at the middle of last year. During the week the death-rate was equal to 20·3 in Dublin (against 13·3 in London and 15·0 in Glasgow), 19·8 in Belfast, 25·8 in Cork, 20·2 in Londonderry, 17·6 in Limerick, and 49·4 in Waterford, while in the 13 smaller towns the mean death-rate was 19·8 per 1000.

The 463 deaths from all causes were 71 fewer than in the previous week, and included 29 which were referred to the principal epidemic diseases, against 37 and 59 in the two preceding weeks. Of these 29 deaths, 9 resulted from measles, 8 from infantile diarrhœal diseases, 4 each from scarlet fever and whooping-cough, 3 from diphtheria, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·3, against corresponding rates of 0·9 and 1·6 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 18, 19 and 23 in the three preceding weeks, fell to 9, and comprised 5 in Dublin, 3 in Belfast, and 1 in Cork. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 9, 8, and 9 in the three preceding weeks, numbered 8, of which 3 were recorded in Belfast and 2 in Dublin. The fatal cases of whooping-cough, which had been 8, 4, and 12 in the three preceding weeks, fell to 4, and included 2 in Belfast. The deaths attributed to scarlet fever, which had been 7, 3, and 9 in the three preceding weeks, declined to 4, and comprised 3 in Belfast and 1 in Dublin. The 3 fatal cases of diphtheria, of which 2 were registered in Dublin and 1 in Belfast, were equal to the average in the three preceding weeks. The death from enteric fever was registered in Waterford.

The deaths referred to diseases of the respiratory system, which had been 116, 92, and 147 in the three preceding weeks, fell to 114 in the week under notice, and were 51 below the number registered in the corresponding week of last year. Of the 463 deaths from all causes, 145, or 31 per cent., occurred in public institutions, and 15 resulted from different forms of violence. The causes of 16, or 3·5 per cent., of the total deaths, were not certified either by a registered medical practitioner or by a coroner after inquest; in the large English towns the proportion of uncertified causes did not exceed 0·9 per cent.

LECTURES ON MILK, ITS SUPPLY AND DISTRIBUTION.—Commencing on Jan. 20th, a course of ten lectures on these subjects will be given at the South-Western Polytechnic Institute, Manresa-road, Chelsea. The lectures, which will be given on successive Thursday evenings at 7.30 P.M., have been arranged for those engaged in the milk trade, or in institutions where milk is largely consumed, and for sanitary and food inspectors. A practical class for simple laboratory work will be held immediately after the lectures.

Correspondence.

"Audi alteram partem."

FUNCTIONAL NERVOUS DISEASE.

To the Editor of THE LANCET.

SIR,—In your issue of Jan. 15th under the above heading there is a letter of very great significance from Dr. C. A. Mercier criticising the so-called method of psycho-analysis, which has taken the place of the older method of observation and induction, hitherto called psychological analysis, the assumed utility of the former claiming for it the fresh title of the "new psychiatry." Those whose lives have been devoted to the investigation of nervous and mental disorders have attributed the causes of these pathological conditions to lie among the factors of heredity, environment, education, fatigue, and various toxins generated from within or introduced from without, but they have not excluded the disturbing effects of strong emotion, grief, anxiety, worry, or any moral shock.

The school of psycho-analysis introduced by Freud has depicted man as a beast or animal dominated by crude instincts and base passions—a natural corollary to the teachings of Nietsche, Treitschke, and Bernhardi—and their set purpose is to discover some unpleasantly painful or shameful event in the past history of the patient, because these are taken to be the root-cause of most cases of mental perversion, and also because sexual matters are looked upon as the bedrock of most cases of insanity. This hypothesis is not only unjustifiable but unproven, and it is, moreover, an insult to the clean mind of an innocent sufferer; and I join in the strong remonstrance so ably put forward by Dr. Mercier, who is a mental physician, a physiologist, and psychologist of the highest standing. In season and out of season Dr. Mercier has called attention in the public press and elsewhere to the gross injury caused to the patient by the practices of this school designated as the "new psychiatry." I can quote from personal experience the actual damage done by the psycho-analyst through suggestions made of lewd, objectionable, and bestial thoughts to the moral feelings of an unsuspecting mind. I fully admit that much has been done by some psychologists to elucidate facts in the unconscious field, but I question whether one single case has ever recovered through psycho-analysis. It is within the knowledge of every practising physician that certain sensations or experiences are able to determine certain attitudes of mind after the memories of the former had faded, and the hypothesis that the memories of past experiences are potential agencies in determining certain abnormal mental states is an acknowledged truth; but it is not proved that these are based upon "sexual traumata," whatever this may mean.

I speak with some authority as a teacher of mental diseases in one of the largest metropolitan schools of medicine, as a former examiner in the subject at the London University, and as the resident physician of one of the largest asylums in this country, and I have no hesitation in affirming that the practice of the psycho-analysts should be repressed with all the strength and force of a controlling hierarchy—if such there be? As has been truly said, "a diagnosis in the Freudian sense is a

diagnosis of the mind that made it." I am not in sympathy with much that has been said recently by English followers of Freudism, and it is satisfactory to know that for some time past the chief exponent of this doctrine in Europe, K. Jung, of Zurich, has broken with the school upon certain points.

I repeat, from my own practical experience and knowledge of the effects of psycho-analysis upon those among whom the craft is practised, that in so far as it is a probing for hidden and forgotten sexual occurrences, it is repulsive and disreputable, ethically objectionable and deserving of the strongest condemnation.

I am, Sir, yours faithfully,

ROBERT ARMSTRONG-JONES, M.D. Lond.

Claybury, Jan. 19th, 1916.

SHRAPNEL WOUNDS.

To the Editor of THE LANCET.

SIR,—A large number of injuries caused by shell fire are now very generally described as "shrapnel wounds," and this would appear to be a curiously erroneous description. The shrapnel shell, called after its inventor, Lieutenant, afterwards Lieutenant-General, Shrapnel, Royal Artillery, and brought into the service in 1803, is a projectile in which a small bursting charge opens the shell and liberates the bullets with which it is packed. In its present form it takes the shape of the ordinary elongated projectile, and consists of a thin steel casing, in the base of which is a small charge of black powder. At the upper end, and partially forming the coned top, is a time and percussion fuse, the flash from which is communicated to the bursting charge by a tube passing down the interior of the shell. Round this tube are packed spherical bullets of lead hardened with antimony, and varying in number and weight with the calibre of the gun, the interstices being filled in with resin poured in in the melted state. Before firing the time arrangement of the fuse is so set as to ensure the burst taking place at the most effective distance short of and above the objective. On the ignition of the bursting charge the fuse is blown out, together with the coned top of the shell, the latter being only lightly attached to the body, and the bullets thus liberated fly forward in a cone with the velocity that the shell then has, the steel body travelling on intact. Should the time arrangement be set too long, the percussion part of the fuse ensures the shell opening on impact, but to be effective against troops in the open the shell should burst in the air. From the above it will be seen that shrapnel shells have practically no fragments, and distribute no splinters.

As an illustration of the fact that the word shrapnel is commonly used to express fragments or *mitraille*, I may say that when pointing out to a police inspector how much damage had been done to the walls and doors by the stones in the reinforced concrete floor, in a building in which a Zeppelin bomb had fallen, he said, "Yes, sir, bits of shrapnel." I now find that this misuse of the word has become general, and that wounds obviously inflicted by the sharp, jagged splinters of a high-explosive common shell are described as shrapnel wounds, whereas those caused by shrapnel bullets are always—and rightly—classed among bullet wounds. There are, both in our service and in that of the enemy, a few high-explosive shrapnel, which do break up and distribute splinters, but the fuse for these is so complicated, since this projectile is meant to serve both purposes—i.e., the ordinary and the high-explosive shell—that its use is very limited. We may say, then, that the so-called shrapnel wounds are invariably wrongly described, as this projectile is the only one which, on the explosion of its bursting, or more properly opening, charge does not distribute splinters.

I am, Sir, yours faithfully,

DESMOND O'CALLAGHAN,
Major-General.

Jan. 18th, 1916.

A CASE OF MASKED MALARIA.

To the Editor of THE LANCET.

SIR,—Mosquitoes are common in Accra, especially in the native quarter, those of the genus Stegomyia being most frequently met with. Anophelines, though less common, are also seen. In the European residential quarter, however, where sanitary measures are more under control, it is the exception to find anopheles or, in fact, any type of mosquito. Despite this fact, malarial fever amongst the European population is often met with, the prevalent type being subtertian. The following is a case in point.

The patient, a European aged 33 years, arrived in the Colony early in August, 1914. For the first two months he was engaged in work which took him to Lome (Togoland) and to Duala (Cameroons). At these places he was severely bitten by mosquitoes. On his return to the Gold Coast he was stationed in Accra. The patient was addicted to alcohol, and would consume "the best part of a bottle of whisky a day." Quinine was taken very irregularly. Two months previous to the date of his admission to hospital he began to complain of feeling "off colour," vomited occasionally, and had irregular slight rises of temperature. Only on one occasion prior to admission was he so ill as to necessitate his absence from duty for two days. He also suffered from insomnia, but this did not react upon his health in any appreciable way; he was throughout active and cheerful.

On August 21st, 1915, he was admitted to the Accra Hospital, and I am indebted to the senior medical officer in charge, Dr. J. H. Collier, for the clinical notes.

On admission there was no fever, but the patient vomited once or twice. Two thin blood films were at once sent to the laboratory for examination, this being the routine procedure. Young ring forms of P. falciparum were found in fair numbers, averaging 5 in a high-power field. A differential count gave the following percentage readings: polymorphonuclears, 48; large mononuclears, 14; lymphocytes, 35; and basophiles, 2. Vomiting ceased the day after admission and the patient was practically well. On Sept. 3rd another examination of his blood showed numbers of subtertian gametocytes (crescents), one crescent in eight fields, and the differential count was: polymorphonuclears 55 per cent., large mononuclears 12, and lymphocytes 33, with marked leucopenia. The temperature remained subnormal, and the patient continued to show no clinical indication of the malarial infection in his blood. During his stay in hospital he received 5 grains of quinine daily.

The outstanding features of this rather unusual case are: 1. The total absence of fever and other symptoms of a malarial infection, notwithstanding the heavy infection of the patient's blood and the proved activity of the parasites, as evidenced by their progressive development from rings to crescents. 2. The marked leucopenia and the absence of any sign of phagocytosis. 3. The large number of crescents in the peripheral circulation, a rather unusual occurrence, for it is generally held that, owing to their tendency to clump, these forms are frequently arrested in the finer capillaries of the internal organs, spleen, brain, &c., and that it is by virtue of this property that the pernicious symptoms of a subtertian infection are brought about.

In his "Prevention of Malaria," under the heading of "The Appearance of Sexual Forms," Sir Ronald Ross states:—

The malignant gametids begin to appear about a week after the onset of the fever, and may remain circulating in the blood for several weeks. We do not know what determines their appearance, but the asexual forms and the fever frequently vanish when they appear.

Again, under the heading "The Parasites during the Rallies," the same writer states:—

In the rallies between relapses, few sporids, frequently none at all, can be discovered, though gametids which do not seem to produce fever may still abound.

Here, then, is a partial explanation of the absence of fever in this case; the cause of the absence of fever at a time when sporids were in abundance is, however, not very evident.

Finally, under the heading "Probable Causes of Rallies and Relapses" Sir Ronald Ross states:—

Cases are often reported in which the patient during relapses suffers from malaise, dyspepsia, and so on, rather than fever, although parasites are numerous enough to be found. In such, I presume, the antitoxic power of the blood has become better developed than the germicidal power.

Herein perhaps lies the second half of the explanation of this case, though one is tempted to ask what determines the development of the antitoxic power of the blood at the expense of the germicidal power? If we assume that the absence of fever and of the usual clinical manifestations of malaria is the result of antitoxin sufficiency, then the patient in this case was well protected. If, on the other hand, the presence of fever is an index of reaction to infection on the part of the body, and a phenomenon in the course of phagocytosis and bacteriolysis, then, in the absence of evidence of reaction, we must assume that despite his appearance of well-being, the patient was, or would soon be, in a dangerous condition, one perhaps in which the slightest determining cause would precipitate pernicious symptoms, such as coma or blackwater fever. Had the amount of alcohol taken, by virtue of its vaso-dilator effect on the peripheral vessels and its depressant effect on the thermogenetic centre, any bearing on the case, and is not the presence of a large number of crescents in the peripheral circulation and the absence of fever to be thus explained? Personally I am inclined to the opinion that the case was one in which the symptoms of malaria had been masked by alcohol, and it seems to me that "masked" malaria, as distinguished from "latent" malaria, may be brought about by influences other than alcohol, and that such a condition frequently precedes an attack of blackwater fever, though of course in these cases the blood infection may not be so evident.—I am, Sir, yours faithfully,

SAM. L. BROHIER, M.R.C.S. Eng., L.R.C.P. Lond.,
D.P.H. Lond., L.M.S. Ceylon.,
West African Medical Staff.
The Laboratory, Accra, Gold Coast Colony. Nov. 26th, 1915.

ILLUMINATION IN OPERATIONS.

To the Editor of THE LANCET.

SIR,—After experimenting with ceiling lamps distributed in various positions, the writer has found the following arrangement to be very satisfactory and has used it in his theatre for the last three years. Four electric lamps, each of 60-candle power and enclosed in elongated glass globes, are attached to the ceiling, which is 13 feet above the floor. The lamps are arranged, 1½ feet apart, in a single row above the operation table in its long axis and give a brilliant light remarkably free from shadows. The glass globes are watertight and allow of the ceiling being hosed with the rest of the theatre. For operating at the bottom of long and narrow cavities either a reflected light or a small lamp of the cystoscope type inserted in the cavity is usually essential.

For operations performed in daylight a theatre with a south, rather than the usual north, aspect has considerable advantages, which include an excellent light, even on dull days, and a natural warmth which minimises the amount of artificial heating required.—I am, Sir, yours faithfully,

Plymouth, Jan. 12th, 1916. C. HAMILTON WHITEFORD.

LOSS OF SPEECH AND SHELL-SHOCK.

To the Editor of THE LANCET.

SIR,—During my 22 years' service in the army I can recall five cases of men having been brought to hospital suffering from sudden loss of speech due to shock. I found they were all cases of malingering and recovered their voice under an anæsthetic. Ether is the anæsthetic to give, and it is well to keep the patient under it for half an hour, and he will have plenty to say when he recovers.—I am, Sir, yours faithfully,

J. MCLAUGHLIN, M.D.,
Bangor, Jan. 10th, 1916. Lieutenant-Colonel (late), R.A.M.C.

THE PREPARATION OF CATGUT BY PICRIC ACID AND OIL OF CLOVES.

To the Editor of THE LANCET.

SIR,—The method of preparing catgut suggested by Roeder is very simple and inexpensive. The raw gut is placed in a saturated solution of picric acid in oil of cloves for one week, rinsed thoroughly for about ten seconds in sterile water or a 1/5000 bichloride solution to remove the oil globules clinging to the surface, and then stored in 95 per cent. alcohol. In four days it is ready for use. Before placing the gut in the saturated solution of picric acid and oil of cloves I prefer to formalise it in a 5 per cent. solution for 24 hours; this modification undoubtedly gives the gut additional strength and keeps it from swelling. The acid and the oil both being soluble in alcohol are extracted to a considerable extent from the catgut, rendering the suture unirritating to the tissues.

The advantages claimed for the method are these. The gut is rendered absolutely sterile throughout, as the picric acid and oil of cloves have marked penetrating powers. The oil of cloves, besides being a powerful germicide, renders the gut pliable, very strong, and less quickly absorbed, and, further, the gut does not deteriorate with storage. I have used the slightly modified Roeder method of preparation for some months with gratifying results, and can recommend it with confidence as one of the best for the preparation and sterilisation of catgut.

I am, Sir, yours faithfully,

J. D. SPEID SINCLAIR, M.B., CH.B. Glasg.,
Jan. 12th, 1916. Resident Medical Officer, Bolingbroke Hospital.

CANCER AND HEREDITY.

To the Editor of THE LANCET.

SIR,—Though an isolated case in the experience of one individual be of dubious value the collation of such instances may be of some importance. With the latter object in view I venture to bring to your notice the following family history with which I have recently become acquainted.

A had six brothers; four of these married, all dying without issue. A himself died at the age of 36 from pyloric cancer. He had three daughters and five sons. The eldest, a daughter (B) died, unmarried, from carcinoma mammæ. Five of his children married; two died childless; the eldest son had one child, a girl, who died young; a daughter married twice, having one child by each husband, and both died young. Another son (C) died, aged 67, from cancer of the bowel; his wife's mother and sister, as well as an old servant who lived with them, all died from cancer in the same house. Another son has two children, the only representatives of the third generation, and the father-in-law of one of these died from cancer.

It would seem almost as though the *vis medicatrix naturæ* were applied in this family to suppress it, for three members of it have died from cancer, six are childless, and two others who have married into other families with a history of cancer are also childless. A comparable case is recorded in the *Gazette des Hôpitaux* for May, 1914. This refers to an officer of the First Empire who died from cancer of the stomach; cancer appeared in the two succeeding generations of his descendants. These may be coincidence, but abundant coincidences form a law.

I am, Sir, yours faithfully,

Farnborough, Jan. 16th, 1916. JAMES RAE.

Obituary.

GUIDO BACCELLI.

THE "Third Italy" has just lost one of its creators in the veteran clinical teacher and consultant who was revered throughout its borders as typical of the forces, moral as well as combatant, that inspired and promoted that "Risorgimento."

Born in Rome on Nov. 25th, 1832, Guido Baccelli possessed a hereditary love of the medical art and began his preliminary studies in the Ghisleri College at Pavia in the early forties of the century. Those were the days when Italy was agitated "from the Alps to Etna" with the yearning for freedom and unity, and young Baccelli was among the keenest in the patriotic ranks. He ran away from college to enrol among the volunteers and was with difficulty brought back to his studies. At the end of the scholastic years indeed he joined the Garibaldini in the defence of Rome against the French till at the close of that heroic but abortive struggle he had to fly the city as an exile. That was in the early summer of 1849, and then began those medical studies which were ever after the ruling passion of his life. Having graduated with great distinction at the Sapienza, he was, when little over 24 years of age, elected to the chair of Legal Medicine from which, after a brilliant discharge of its duties, he passed to the professorship of Pathological Anatomy, and thereafter to that of Clinical Medicine, a post which he never abandoned. An admired and diligent student of the great Morgagni, he translated and edited the works of that pioneer and followed up his researches on cognate lines, corresponding with contemporary German pathologists, Leube in particular, and introducing, while developing, their findings in the Roman school. He devised methods of diagnosis in thoracic diseases which, after their soundness had been confirmed in his own clinique, were adopted in other schools, transalpine as well as Italian; and he devoted special study to malarial fever, in connexion with which he published a treatise on the spleen, and drew attention to the phenomena of the "malaria perniciosa" and the form which he designated "subcontinua." In therapeutics he was among the first to practise intravenous injections of mercury in syphilis, while his experiments in treating traumatic tetanus by the intravenous injection of phenic acid, initiated in 1901, have gradually found acceptance, and in the war now raging on the North-Eastern frontier the method is reported to have proved highly successful.

With all this varied work he never lost touch with his country's general progress; particularly was he interested in the all-important sphere of education. With well-nigh half of her population unable to read or write, Italy possesses 23 universities, each duchy, archduchy, or kingdom absorbed into her unity having contributed one or more of these "seats of learning." Graduation thus cheapened and utilised, the country became inundated with briefless barristers and practitioners without patients, so as to create that most dangerous of all classes, the "educated unemployed." Having, after his return for a Roman constituency, become Minister of Public Instruction, Baccelli's chief concern was to reduce this plethora of degree-giving schools and retain only four, whose efficiency would be ensured by better emoluments for the professoriate, and whose degrees could be accepted as adequate to modern standards. Under the present system, he said, "we are creating an 'academic proletariat,' which is responsible for much of the agitation, political and social, which has proved a real hindrance to the country's development." The speech in which he introduced his proposed reform was one of the most memorable ever heard at Montecitorio—a specimen of the finished oratory which he could always command on critical occasions. But the short-lived Ministeries in which he held the portfolio left no time for the carrying out of his reforms, and Italy remains, to her own disadvantage, a victim to what he termed "academic hypertrophy." A brief tenure of the Ministry of Agriculture gave him another opportunity of introducing salutary innovations—the reclamation or "bonifica" of the Roman Campagna; but it was always in his control of public instruction that he achieved, wherever practicable, the most conspicuous results. An accomplished classical scholar, able indeed on the spur of the moment (as at the Berlin International Congress of Medicine in 1890) to deliver an address in the Latin tongue which from its clear intonation, assisted by attitude and gesture, was wonderfully intelligible and impressive, he took the deepest interest in archæological research, and, aided by the Cavaliere Rodolfo Lanciani, he excavated the Hall of the Vestals and brought to light in the Forum not a few monuments which solve many problems, historic and other, long prolific only of barren discussion.

But these undertakings were by-works to his main programme, which was to rehabilitate his compatriots, physically, morally, and intellectually, and he laboured throughout his life to develop and to make ever more efficacious the science and art of medicine. His crowning effort in this direction was his founding the great hospital of the Policlinico, which remains a monument not only of his enlightened acceptance of wholesome

suggestions from the outside world, but of that catholicity characteristic of true science which does honour to coadjutors and pioneers whatever their nationality. It was this spirit which won for him reciprocal acknowledgment throughout the academic world, corresponding member, or honorary fellow, as he was, of innumerable scientific bodies, medical and other, throughout the two hemispheres. His loss to Italy is only less than his loss to the republic of learning, as the condolences which have poured in on his family from far and near abundantly testify. At all the medical schools in Italy *oraisons funèbres* have been delivered from the professorial chairs to culminate in that national demonstration of mourning, the State funeral in the Campo Santo of Rome.

CHARLES HENRY FOX, M.D. ST. AND., F.R.C.P.EDIN., M.R.C.S. ENG.

THE death of Dr. Charles Henry Fox on Dec. 25th last, in his seventy-ninth year, will recall to alienists the work carried on by the Fox family at Brislington House Asylum, Somerset, for the greater part of the last century, and removes from our midst the sole medical representative of a distinguished family of physicians.

Dr. Fox was born on June 7th, 1837, at Brislington House, and was the fourth son of Dr. Francis Ker Fox, of Brislington House Asylum, and brother of the late Dr. Edward Long Fox, of Clifton, Bristol. Educated at Shrewsbury, he entered as a student at St. George's Hospital in 1855. After taking the diploma of the Royal College of Surgeons of England he went for certain classes to Edinburgh, and in 1860 graduated in medicine at St. Andrews. The following year he joined his father at Brislington House Asylum, and remained there until 1894 in partnership at first with his father and then with his half-brother, Dr. Bonville Bradley Fox. He retired from practice in 1894 and went to live at Edinburgh, which he chose as his place of residence from his pleasant memories of earlier student life, and where he had many old and valued friends. His health became seriously impaired 12 years ago, and for the last few years he had become completely invalided. Yet almost to the day of his death he took a keen interest in subjects of which he made a hobby, and preserved his genial disposition and bright conversational powers.

NORTHCOTE WILLIAM SPICER, M.R.C.S., L.S.A.

Mr. N. W. Spicer died recently at his residence, Chard, Somerset, in his eighty-sixth year. The deceased was born in Chard, where his father was a well-known surgeon. He received his medical education at St. Bartholomew's Hospital, taking the "College and Hall" in 1853 and 1854 respectively. He shortly afterwards joined his father at Chard, and for many years had the leading practice in the district and held the principal medical appointments. He was a great supporter of the local hunts, being for a long time honorary secretary to the Cotley Hunt, and was also a frequent follower of the Taunton Vale and the Blackmore Vale Hunts. He was for several years president of the Chard Constitutional Club. Mr. Spicer was highly esteemed and respected in Chard, where he took an interest in all local matters, and by his death the profession has lost a much-respected representative.

THE LATE SIR FREDERIC HEWITT.

WE have received many communications, some intended for publication and some not, from friends of the late Sir Frederic Hewitt, deploring his death.

Mr. W. J. McCardie writes:—

I wish to add to your notice in THE LANCET of last week a few words of appreciation of my friend the late Sir Frederic Hewitt, whom for many years I have held in honour as a man and in the highest esteem as an anæsthetist. His example has stimulated many an earnest follower, and personally I can never forget what I owe to him. A simple-minded man, ever ready to fairly discuss problems in anæsthesia, he was yet strong in his convictions, and would face any opposition even though he were one alone opposed to the views of a large meeting. He thought it his duty to agitate for legislation to prevent unqualified practice of anæsthesia, and gave up much of his valuable time in advocating his cause. His insistent work for reform in anæsthetics will soon, it is to be hoped, bear full fruit. His original and practical work, writings, and suggestions in most departments of anæsthesia marked him a master of his art and as the leader among anæsthetists of his time, and he was so regarded throughout the English-speaking world. He had a natural gift for bringing confidence to patients and producing anæsthesia of the best type. He was always evolving some new idea and working it out with his well-known thoroughness and perseverance. His book on "Anæsthetics and their Administration" is a record of his observations, and is replete with detailed practical and helpful information such as the anæsthetist can hardly get elsewhere. I mourn the premature loss of a great-hearted friend and a leader among anæsthetists, whose status he did so much to improve. His influence will long last.

Mr. Bellamy Gardner writes:—

The powerful influence of Hewitt's judgment and will upon the course of medical practice and opinion, as well as his untiring labours for the advancement of the science and art of surgical anæsthesia, have ceased, but his written words remain to remind us of his extraordinary accuracy, assiduous attention to detail, and high appreciation of all the responsibilities of medicine. He was distinguished for his courage and capacity.

Mr. John Cahill expresses more particularly the feeling of St. George's men in the loss which they have sustained. He writes:—

To one who has watched his unfailing devotion to his work, from the days of studentship and house officer, all through a career of painstaking and deliberate toil, culminating in the highest position in an important specialty, it seems a marvel that Hewitt should have found the time and energy to maintain in so many and diverse directions the personal intimacy which was his ideal of social life. Yet Hewitt was the man who made the social undertakings of his circle a success by his unfailing tact and foresight, repeatedly bringing together the friends who would otherwise have drifted apart from himself and from each other. In the later and more ample years of success it was at Hewitt's hospitable table that you met the mutual friend whom you might not have seen for half a life-time. Within recent years it was he who breathed new life into the Students' Club of his old medical school, bringing into one social organism the scattered units of which it was composed and associating the students of former years with the rising generation of the day. The circumstances of his return, comparatively late in life, to take up a position on the staff of St. George's Hospital form a characteristic proof of the value which Hewitt attached to all old friendships and old associations. It was at other hospitals that he had been given the opportunities which he had turned to such good account. He was then at the zenith of his career, and there was no professional or personal advantage to be gained by taking on the fresh duties of the appointment which was offered to him. But the assurance that he was wanted by his old hospital and school sufficed to induce his acceptance of the additional burden. How loyally and whole-heartedly he responded to the call then made upon him is known to his colleagues and to the governing body of that hospital.

The War.

THE CASUALTY LIST.

THE following names of medical men appear among the casualties announced since our last issue:—

Wounded.

Lieutenant N. S. Joshi, I.M.S.
Captain J. A. Sinton, I.M.S.
Lieutenant-Colonel W. Ransom, R.A.M.C., attached to the 3rd Northumbrian Field Ambulance (T.F.).
Captain H. S. Milne, R.A.M.C.

THE HONOURS LIST.

The following promotions and appointments of medical officers are announced:—

For Services Rendered in Connexion with the War.

To be C.B. (Military Division) additional Member.

Russell, Col. (temp. Surg.-Gen.) M. W., Deputy Director-Gen., A.M.S.

For Services Rendered in Connexion with Military Operations in the Field.

To be C.B. (Military Division) additional Members.

Ford, Surg.-Gen. R. W., D.S.O.
Grayfoot, Col. B. B., I.M.S.
Maher, Col. J., A.M.S.
Sexton, Col. M. J., A.M.S.
Russell, Col. J. J., A.M.S.
Browne, Col. E. G., A.M.S.
Beevor, Lt.-Col. (temp. Col.) W. C., C.M.G., R.A.M.C.
Gray, Maj. (temp. Col.) H. M. W., R.A.M.C. (T.F.).
Dawson, Col. (temp.) Sir B. E., K.C.V.O., R.A.M.C. (T.F.).

To be C.M.G., additional Members.

Pike, Col. W. W., D.S.O., A.M.S.
Nichol, Col. C. E., D.S.O., A.M.S.
Skinner, Col. B. M., M.V.O., A.M.S.
Smith, Lt.-Col. and Bt. Col. F., D.S.O., R.A.M.C.
Hunter, Col. G. D., D.S.O., A.M.S.
Atkins, Col. (temp.) J., A.M.S.
Lister, Col. (temp.) W. T., A.M.S.
Young, Col. C. A., A.M.S.
Macdonald, Col. S., A.M.S.
Rawnsley, Col. G. T., A.M.S.
Wallace, Col. (temp.) C. S., A.M.S.
Thomson, Col. (temp.) H. A., R.A.M.C. (T.F.).
Pickard, Lt.-Col. R., R.A.M.C. (T.F.).
Soltau, Lt.-Col. A. B., R.A.M.C. (T.F.).
Hamilton, Lt.-Col. J. A., I.M.S.
Sharp, Lt.-Col. A. D., R.A.M.C. (T.F.).
Hinge, Lt.-Col. (temp. Col.) H. A., R.A.M.C.
Milne-Thomson, Lt.-Col. A., R.A.M.C. (T.F.).
Hooper, Lt.-Col. A. W., D.S.O., R.A.M.C.
Moore, Lt.-Col. G. A., R.A.M.C.
McMunn, Lt.-Col. J. R., R.A.M.C.
Morgan, Lt.-Col. C. K., R.A.M.C.
Kiddle, Lt.-Col. F., R.A.M.C.
Nickerson, Lt.-Col. W. H. S., V.C., R.A.M.C.
Penny, Lt.-Col. F. S., R.A.M.C.
Leake, Lt.-Col. J. W., R.A.M.C.
Brakenridge, Lt.-Col. F. J., R.A.M.C.
Chopping, Lt.-Col. A., R.A.M.C.
Douglas, Lt.-Col. H. E. M., V.C., D.S.O., R.A.M.C.
Lloyd, Lt.-Col. L. N., D.S.O., R.A.M.C.
Watson, Hon. Lt.-Col. (temp.) C. G., No. 1 British Red Cross Hospital.
Mackay, Maj. W. B., R.A.M.C. (T.F.), attached to Northumberland Fusiliers (T.F.).
Cruddas, Maj. H. M., I.M.S.
Riach, Maj. W., R.A.M.C.
Jeudwine, Maj. W. W., I.M.S.
Davidson, Maj. P., D.S.O., R.A.M.C.
Martin, Lt.-Col. T. M., Commanding No. 2 Australian General Hospital.
MacLaren, Col. M., Canadian A.M.C.
Nasmith, Lt.-Col. G. G., Canadian A.M.C.
Ross, Lt.-Col. A. E., Canadian A.M.C.
Parkes, Lt.-Col. W. H., Commanding New Zealand Hospital.

For Distinguished Service in the Field.

To be Brevet-Colonels.

Macnab, Lt.-Col. A. J., I.M.S.
Sloan, Lt.-Col. J. M., D.S.O., R.A.M.C.

To be Brevet-Lieutenant-Colonels.

Boulton, Maj. H., I.M.S.
Browse, Maj. G., I.M.S.
FitzGerald, Maj. F. G., R.A.M.C.

To be Brevet-Majors.

Dill, Capt. M. G., R.A.M.C.
Draycott, Capt. C. N., R.A.M.C. (T.F.).
Franken, Capt. C. H. S., R.A.M.C. (T.F.).
Ozanne, Capt. R. C., R.A.M.C. (S.R.).
Tate, Capt. R. G. H., R.A.M.C.

To be Companions of the D.S.O.

Ainsworth, Maj. R. B., R.A.M.C.
Booth, Maj. E. B., R.A.M.C.
Brown, Maj. G. H. J., R.A.M.C.
Brown, Maj. J. P., R.A.M.C. (T.F.).
Burke, Maj. B. B., R.A.M.C.
Campbell, Maj. J. H., R.A.M.C.
Easton, Maj. P. G., R.A.M.C.
Hanafin, Maj. P. J., R.A.M.C.
Harding, Maj. D. L., R.A.M.C.
Hartigan, Maj. J. A., R.A.M.C.
Irvine, Maj. A. E. S., R.A.M.C.
Kerans, Maj. G. C. L., I.M.S.
Low, Maj. N., R.A.M.C.
Meaden, Maj. A. A., R.A.M.C.
Needham, Maj. R. A., I.M.S.
Ritchie, Maj. M. B. H., R.A.M.C.
Roberts, Maj. F. E., R.A.M.C.
Roe, Maj. W. F., R.A.M.C. (T.F.).
Rogers, Maj. J. S. Y., R.A.M.C. (T.F.).
Ryan, Maj. E., R.A.M.C.
Sampson, Maj. F. C., R.A.M.C.
Smallman, Maj. A. B., R.A.M.C.
Thompson, Maj. R. J. C., R.A.M.C.
Turner, Maj. C. H., R.A.M.C.
Downie, Capt. J., R.A.M.C. (T.F.).
Houston, Capt. J. W., R.A.M.C.
MacArthur, Capt. W. P., R.A.M.C.
O'Neill, Capt. E. M., R.A.M.C.
Worthington, Capt. F., R.A.M.C.
Steven, Lt. (temp.) J. F., R.A.M.C.

Awarded the Military Cross.

Anderson, Capt. J. W., R.A.M.C. (T.F.).
Ballingall, Capt. D. C. G., R.A.M.C.
Bazett, Capt. H. C., R.A.M.C. (S.R.).
Bearn, Capt. F. A., R.A.M.C. (S.R.).
Beddows, Capt. E. C., R.A.M.C.
Bourdillon, Capt. (temp.) L. G., R.A.M.C.
Boyd, Capt. J. E. M., R.A.M.C.
Chavasse, Capt. N. G., R.A.M.C. (T.F.).
Compton, Capt. A. G. W., R.A.M.C. (S.R.).
Cormack, Capt. H. S., I.M.S.
Cree, Capt. (temp.) R. E., R.A.M.C.
Douglas, Capt. (temp.) C. G., R.A.M.C.
Dowse, Capt. J. C. A., R.A.M.C. (S.R.).
Elvery, Capt. P. G. M., R.A.M.C.
Errington, Capt. R., R.A.M.C. (T.F.).
Fazan, Capt. E. A. C., R.A.M.C. (T.F.).
Fletcher, Capt. (temp.), J. H., R.A.M.C.
Foot, Capt. (temp.) W., R.A.M.C.
Forgan, Capt. R., R.A.M.C. (S.R.).
Gilchrist, Capt. A. J., R.A.M.C. (S.R.).
Hairsine, Capt. O., R.A.M.C. (S.R.).
Hampson, Capt. T., R.A.M.C. (S.R.).
Howell, Capt. F. D. G., R.A.M.C.
Knowles, Capt. (temp.) H. R., R.A.M.C.
Large, Capt. S. D., R.A.M.C.
Lightstone, Capt. H., R.A.M.C. (T.F.).
Mackenzie, Capt. (temp.) E. F. W., R.A.M.C.
MacMillan, Capt. J., R.A.M.C. (T.F.).
Marrack, Capt. (temp.) J. R., R.A.M.C.
McCarthy, Capt. W. H. L., R.A.M.C. (S.R.).
McQueen, Capt. C., R.A.M.C.
Millar, Capt. (temp.) G., R.A.M.C.
Miller, Capt. S., R.A.M.C. (S.R.).
Miller, Capt. T. M., R.A.M.C. (S.R.).
Murdoch, Capt. J., R.A.M.C. (T.F.).
Neligan, Capt. (temp.) G. E., R.A.M.C.
Nicholson, Capt. R. B., I.M.S.
O'Keeffe, Capt. J. J., R.A.M.C.
Paton, Capt. W. C., I.M.S.
Petit, Capt. G., R.A.M.C.
Robertson, Capt. (temp.) R. C., R.A.M.C.
Sherlock, Capt. H. B., R.A.M.C. (S.R.).
Somerville, Capt. (temp.) T. V., R.A.M.C.
Smith, Capt. S. H., R.A.M.C.
Sparks, Capt. C. W., R.A.M.C. (S.R.).
Steel, Capt. O. W. D., R.A.M.C. (T.F.).
Sutton, Capt. E. A., R.A.M.C.
Turner, Capt. F. T., R.A.M.C.
Wallace, Capt. Q. V. B., R.A.M.C. (S.R.).
Whigham, Capt. (temp.) J. R. M., R.A.M.C.
Wood, Capt. C. A., I.M.S.
Wylie, Capt. T. W., R.A.M.C. (S.R.).
Young, Capt. (temp.) R. F., R.A.M.C.
Dods, Capt. J. E., Australian A.M.C.
Guthrie, Capt. R.N., New Zealand A.M.C.
Cagney, Lieut. (temp.) P., R.A.M.C.
Driberg, Lieut. (temp.) J. D., R.A.M.C.
Godding, Lieut. (temp.) H. C., R.A.M.C.
Kirkland, Lieut. (temp.) J. T., R.A.M.C.
McGillycuddy, Lieut. (temp.) R. H., R.A.M.C.
Roche, Lieut. (temp.) A. R., R.A.M.C.
Rowell, Lieut. (temp.) H. A., R.A.M.C.
Smith, Lieut. (temp.) A. C. S., R.A.M.C.
Watson, Lieut. (temp.) W. N., R.A.M.C.
Wright, Lieut. (temp.) A. F., R.A.M.C.

Indian Subordinate Medical Department.

Awarded the Second Class of the Indian Order of Merit.

Ram Singh, 862, 1st Cl. Sub-Asst. Surg. (attd. 1/4th Gurkha Rifles)
Pargan Singh, 1250, 2nd Cl. Sub-Asst. Surg. (attd. 6th Jat Light Infantry).

Awarded the Indian Distinguished Service Medal.

Pohlo Ram, 772, 1st Cl. Sub-Asst. Surg. (attd. 1/9th Gurkha Rifles)
Kishan Singh, 1246, 2nd Cl. Sub-Asst. Surg. (attd. 113th Indian Field Amb.).
Mathuraparshad Sarswit, 1360, 3rd Cl. Sub-Asst. Surg. (attd. 57th Wilde's Rifles, Frontier Force).

By an oversight, which we regret, the name of Dr. A. W. J. MacFadden, Chief Inspector of Foods, Local Government Board, was omitted from the list published in THE LANCET of Jan. 1st of those who were appointed Companions of the Bath in recognition of services rendered in connexion with the war.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following son of a medical man must be added to our lists of those who have fallen during the war:—

Second Lieutenant O. P. Gwynne, 92nd Punjabis, younger son of the late Dr. C. N. Gwynne, of Sheffield.

THE MEDICAL EXAMINATION OF RECRUITS.

The duty of a medical recruiting officer is at no time an easy one. He is aware that it is hoped that he will pass a large number of candidates but that the admission of bad lives will be rightly resented, and he is at the same time offered a fee which does not conform well with the time occupied and the responsibility incurred. Recently the position was made still harder by the sheer bulk of the material he had to cope with and, if we have been correctly informed, by other difficulties of an entirely avoidable nature. As the work of recruiting medical officers seems to be by no means at an end, but, on the contrary, to be entering on a new and more responsible phase, it may serve a useful purpose to state some of the difficulties to which reference is made. Medical officers have been required not merely to examine as many as 250 men at a single depôt, but to do a daily round of five or more such centres. Instead of finding every facility provided for his work, the medical recruiting officer has sometimes had to suffer from insufficient accommodation, a frequent change of orderlies, pressure from the combatant officers to enlist unfit men and overlook weaknesses, and collusion to deceive between recruits and recruiters. The blame must, of course, not entirely be laid on the recruiters, inasmuch as the men examined were volunteers anxious to join and naturally prone to use every means at their disposal to conceal any ailment likely to cause their rejection. But less creditable forms of deception have been reported, especially in regard to the sight test, by recruiters and orderlies, with the aim of securing the grant. Such methods can only bring discredit on the recruiter, and a risk of early breakdown to the recruit.

It is therefore no small satisfaction to receive an official intimation that all these drawbacks have now been remedied for the future in a scheme elaborated by the Director-General of the Army Medical Service, which came into force on Jan. 18th. Examining stations are to be set up, of which 98 are actually in readiness, each under the control of a medical board with an officer, active or retired, of the Royal Army Medical Corps presiding. The number of recruits examined per day at any one station is not to exceed 200, and this number will be well within the compass of the medical examiners. Each recruit is to be carefully examined in a quiet room and then classified according to his capacity. These data will be handed on to the military authorities and dealt with by them according to military requirements. No man will be sent to any work for which the medical board has considered him unfit. In doubtful cases the decision may be referred to expert opinion. Eyesight tests have always been framed with special regard to military efficiency and are not primarily medical standards. The work of translating the military requirement as regards eyesight into actual tests was entrusted to the Ophthalmological Society by the Director-General, and these tests are the basis of acceptance or rejection in the case of each recruit examined. As far as possible an ophthalmic surgeon will be a member of each medical board.

THE PROPOSAL FOR A COLLEGE OF NURSING.

At a special conference of the Society for the State Registration of Nurses, called for the purpose of considering the proposal for a College of Nursing put forward by the Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem (see THE LANCET, Jan. 8th, 1916, p. 109) a resolution was unanimously passed, stating that the proposed scheme was "dangerous to the best interests of the profession of nursing," and agreeing to oppose the proposal and to push forward the demand for legal registration.

CENTRAL MEDICAL WAR COMMITTEE: THE ENROLMENT LETTER.

The following has been addressed by the Central Medical War Committee to every practitioner of military age in England and Wales who has not accepted a commission in the Royal Army Medical Corps:—

DEAR SIR,—You are no doubt aware through the columns of the medical journals and the agency of your Local Medical War Committee of the plan of the Central Medical War Committee for enrolling all medical men of military age for service if and when required in the R.A.M.C. or the Medical Service of the Royal Navy.

The end of the war is not yet in sight. The country is greatly increasing its army, and Lord Derby's scheme has provided an immense number of potential soldiers who will be drawn upon as required. It is clear, therefore, that many more medical officers will be wanted, and members of our profession will, we are convinced, be at least as alive to the military necessities of the country as other members of the community.

Medical practitioners were not expected to attest under Lord Derby's scheme because it was recognised that they could better be dealt with by a Committee representative of their profession.

The Central Medical War Committee, originated by the British Medical Association, but including members who do not belong to the Association, is working with the full consent and authority of the Director-General of the Army Medical Service. The Committee is recognised by him as the medium for providing medical men needed by the War Office for the Army, and at the same time protecting the needs of the civil population.

The Central Medical War Committee now confidently appeals to you as a medical man of military age to assist our national military organisation by enrolling yourself for service in the R.A.M.C. when required, and to justify the confidence placed in the profession, which has been asked to organise itself for the service of the country. To enable you to do this we enclose Forms W. 7 and W. 8, which should be completed and returned to this office with as little delay as possible.

The Committee hopes to enrol every medical man of military age (in the case of our profession up to the age of 45) so that as further calls are made by the Director-General of the Army Medical Service these calls may be promptly met with due regard to the necessity of the services, to the needs of the civilian population, and to the circumstances of individual medical practitioners. Unless all are enrolled it will be very difficult for the Central Medical War Committee to make its calls throughout England and Wales in a manner which will minimise the inconvenience suffered both by the community and by individual medical practitioners.

It must be remembered that the enrolment of all medical men of military age does not mean that all enrolled will be called upon to take a commission. The number called upon will depend entirely on the demands of the services. The calls will be made in consultation with the Local Committees, and due regard will be given to (1) the system of classification adopted as a guide by the Central Medical War Committee (see Appendix A); (2) the circumstances of the individual practitioners; and (3) the opinion of the Local Medical War Committees as to which practitioners can be most easily spared. The Local Committee will advise and coöperate with a view to safeguarding the work and interests of the absent practitioners so far as it is able.

The Central Medical War Committee hopes that all practitioners to whom this is addressed will believe that some months' experience in dealing with this question has made the Committee thoroughly conversant and deeply sympathetic with the difficulties which most practitioners experience in leaving their work. But some thousands of medical men

have now made the sacrifice, and what they have done others may fairly be asked to do. The Committee believes, also, that those who are not able, or are not required, to undertake military service will, so far as opportunity offers and their ability permits, contribute to the military strength of the country by placing their services at the disposal of the Local Medical War Committees for the purpose of arrangements that may be necessary for the conservation of the practices of men of military age to enable them more easily to enrol.

On enrolment you will receive a numbered certificate and this will be taken as equivalent—so far as the medical profession is concerned—to attestation under Lord Derby's scheme. If you have been attested under that scheme you should at once enrol with this Committee. Your attention is drawn to the official communiqué issued by the Army Council on Jan. 13th, 1916 (see Appendix B).

It is to be specially noted that one great privilege is given to the medical profession that does not apply to any other section of the community, namely, that a medical man can enter the R.A.M.C. on a contract for one year's service, whereas everyone else must join the services for the duration of the war. It cannot be assumed, however, that the same privilege will be accorded to those practitioners who fail to enrol with our Committee.

It has been urged frequently that the Army does not require so many medical officers as are now being requisitioned. On this point we would impress upon you that at present no one is in a position to say how many medical officers may be required; that we are in close communication with the War Office; that the question of economy of personnel is continually under discussion and rearrangements are continually being made to obtain the most economical service. We are convinced that the War Office, the Local Government Board and the National Health Insurance Commissioners, as well as this Committee, are fully alive to the needs of the civilian population, and are doing their utmost to adjust the requirements of the military and civilian medical services to the existing conditions.

We are, yours faithfully,
N. BISHOP HARMAN,
ALFRED COX, } Secretaries.

[ENCLOSURES.] **W.7.**

PARTICULARS OF CIVIL SURGEONS DESIROUS OF SERVICE WITH THE ROYAL ARMY MEDICAL CORPS.

Surname .....
Christian name in full .....
Date of birth .....
Qualifications .....
Date of Registration as a Medical Practitioner .....
If willing to serve at home and abroad .....
Date when free to join for duty .....
Whether married .....
Whether of pure European descent .....
Whether a British-born or a naturalised British subject .....
Permanent address .....
.....
Present address for correspondence .....
Whether now serving, or previously served, in any other Government Department (Home, Indian, or Colonial). If so, give particulars. .....
Whether nominated for any other Regiment or Corps. .....
Appointments held since qualifying as a Medical Practitioner. .....
Present employment .....
Particulars of previous Army Service (if any) including Officers Training Corps and Territorial Force. .....
Names and addresses of two persons who can be referred to as to qualifications, character, &c. .....
Languages, knowledge of .....
Whether able to ride .....
(Date) ..... (Signature) .....

W.8.

CENTRAL MEDICAL WAR COMMITTEE.

Recognised by Lord Derby as the means of Organising the Medical Profession with regard to Military Service.

Authority.

I, ... hereby authorise the Central Medical War Committee to forward to the War Office my application for a Temporary Commission in the R.A.M.C. whenever in the opinion of the Central Medical War Committee the time has arrived for my services to be placed at the disposal of the Military Authorities, on the understanding that at least one month's notice will be given to me before my services are required.

(Signed) Name.....
Address.....
.....

Date .....

As Appendix A to this letter there is added the system of classification under which it is proposed that medical men should be called up for service (*vide* THE LANCET, Dec. 11th, 1915, p. 1321); and as Appendix B the communiqué issued by the Army Council on Jan. 13th, 1916, explaining the position of the Central Medical War Committee with regard to enrolment (*vide* THE LANCET, Jan. 15th, 1916, p. 163).

We have received from a well informed correspondent a criticism of a statement made in THE LANCET of Dec. 11th that the Local Government Board were in general agreement with the memorandum brought forward by the Central Medical War Committee. The statement went beyond the facts, as it would seem to imply that the Local Government Board had expressed approval of the system of grouping under which medical practitioners were to be approached by the Central Medical War Committee with a view to accepting medical commissions in the army. The purport of the memorandum was published in the same issue of THE LANCET, but the discussion at the Local Government Board centred round the grouping. The classification under which certain classes of medical practitioners were urged to join the army in preference to others was considerably criticised at the meeting, a fact which was clearly stated in the columns of THE LANCET. The classification was later modified.

SCOTTISH MEDICAL SERVICE EMERGENCY COMMITTEE.

A meeting of the General Committee was held in the Royal College of Physicians of Edinburgh on Jan. 15th, Dr. Norman Walker (Convener) being in the chair. There were present: Dr. A. H. F. Barbour, President of the Royal College of Physicians; Mr. James Hodsdon, President of the Royal College of Surgeons; Dr. Ebenezer Duncan, President of the Royal Faculty of Physicians and Surgeons of Glasgow; Professor J. A. Kynoch, Dean of the Faculty of Medicine, University of St. Andrews; Professor T. H. Bryce, Dean of the Faculty of Medicine of the University of Glasgow; Professor Harvey Littlejohn, Dean of the Faculty of Medicine, Edinburgh University; Dr. John C. McVail, Deputy Chairman, National Health Insurance Commission, Scotland; Professor R. Muir, University of Glasgow; Professor T. K. Monro, University of Glasgow; Dr. J. R. Hamilton, Chairman, Scottish Committee, British Medical Association; Dr. John Adams, Vice-Chairman, Scottish Committee, British Medical Association; Dr. John Playfair, President of the Edinburgh Medical Guild; Dr. John Stevens, secretary, Edinburgh Branch, British Medical Association; Dr. J. R. Currie, medical officer, National Health Insurance Commission, Scotland; Mr. T. H. Graham, secretary. Sir Donald MacAlister, K.C.B., President of the General Medical Council; and Dr. Alfred Cox, medical secretary, British Medical Association, were also present.

The Convener, in reporting upon the progress of the Medical Recruiting Scheme for 1916, stated that about 25 per cent. of the registered practitioners in Scotland had not yet made a return as requested in the Committee's memorandum which was circulated in December last, and he pointed out that in order to be fully prepared to meet any further demands

which the War Office may make upon the profession it was essential that the Committee should possess a complete conspectus of the whole position of medical service in Scotland. This was the object of the registration scheme, and it was most desirable that those practitioners who had not yet answered the inquiry should do so without further delay.

The Presidents of the Royal College of Physicians, the Royal College of Surgeons, and the Royal Faculty of Physicians and Surgeons of Glasgow, and the Deans of the Faculties of Medicine in the Universities of St. Andrews, Glasgow, Aberdeen, and Edinburgh, were appointed, with the Convener, to deal with all applications for letters of excuse, and to report to the Committee.

THE WORK OF AN AIDE-MAJOR.

A correspondent who has been privileged to help in ambulance work in the forest of Argonne, the scene of so much fierce and prolonged fighting, sends us the accompanying photograph illustrating the routine morning's work of an *aide-major* (assistant surgeon) of the French Army Medical Service, conducted, weather permitting, in the open air. His duty is to interview and examine ailing combatants and to apply such treatment as his limited facilities allow. Dry cupping has always been a popular and highly appreciated therapeutical measure among French practitioners, and the *infirmier*, or male nurse, is usually an expert "ventousier" (*ventouse* is the French for cupping glass, whence *ventousier*). It is the panacea for every "tendency to congestion," every pain or ache, and, in general, as a first-aid treatment. The cupping glass and direct auscultation (for the stethoscope is practically unknown in its country of origin) are the means of restoring peace of mind to many a troubled bosom in the trenches.

Open-air work of an *aide-major* in the Argonne.

BRIGHTON TERRITORIAL HOSPITAL.—Mr. L. A. Parry, M.D., F.R.C.S., sends the following notes of cases under treatment at the Brighton Territorial Hospital presenting points of special interest in connexion with gunshot and other wounds. The notes have been grouped under regional headings.

I. *Head and neck.—Fracture of the base of the skull, with paralysis of cranial nerves.*—In this patient there was a small punctured bullet wound just below the middle of the left orbit, with complete paralysis of the seventh and eighth nerves on the same side. Subconjunctival hæmorrhage had taken place and some bleeding from the left ear. An X ray picture was negative. Either the bullet had not entered, the wound being merely a glancing one, or the radiogram failed to show it. A fracture of the base of the skull was undoubtedly present, the petrous portion of the temporal bone being injured, thus accounting for the nerve paralysis.——*A case illustrating the advantage of the immediate excision of bullet wounds.*—A patient was struck by shrapnel which tore open his scalp. The wound was as soon as possible completely excised and sewn up. It healed by first intention with a simple linear scar, with the saving of much time and the avoidance of the risk of septic complications.——*A case of gunshot wound of the mouth.*—The patient was struck by a bullet at one angle of the mouth which was cut open. The bullet passed right through the mouth, cutting the tongue, knocking out nearly all the teeth and portions of the alveoli, and passing out at the opposite angle of the mouth. There was left a septic wound of the lips and cheeks which is healing with simple mouth-washes. A good deal of deformity will be left requiring a plastic operation later.——*A case of wound of the throat by shrapnel.*—This man was struck by a bullet which made a deep gutter wound round the front of the throat from about the angle of one jaw to the same point on the other jaw. He had a little hoarseness immediately after the injury but the larynx was not appreciably affected. The wound presented the same appearance as obtains in a case of cut-throat.

II. *Trunk.—Some examples of wounds of the chest.*—A young soldier was shot through the lung by a rifle bullet, which entered behind the right shoulder and left at the level of the angle of the left scapula. Severe hæmoptysis occurred, lasting two weeks. There were also cough and dyspnœa. A needle was inserted into the right chest and from it came what the patient thinks was clear fluid. A diagnosis of pneumothorax was made. In one month from the receipt of the wound the patient was quite well, all the untoward symptoms having disappeared. In another case the man was shot through the lower part of the chest by a bullet from a machine gun, which entered at the level of the eighth rib in the anterior axillary line and left the body on the opposite side at the same level but rather further back. In its course the bullet must have traversed the right pleural cavity, the liver, the stomach, probably the spleen, and the left pleural cavity. About half an hour after receiving the injury the patient drank some water and almost at once vomited a quantity of blood. There was a doubt whether he had some slight spitting of blood. Signs of a pneumothorax were present. One month after being shot the patient was quite well, all abnormal physical signs having disappeared.

III. *Extremities.—Some cases of bullets lodged in bone.*—A man had a whole shrapnel ball embedded in the head of the tibia. A sinus led down to the bone, and as this showed no

sign of healing and the patient had a good deal of pain an exploratory operation was undertaken and the bullet removed. In the second case a bullet lodged in the lower end of the femur, and was easily removed through the entry wound. If no symptoms are caused by a bullet fixed in bone nothing need be done, but if a sinus persists, or there is pain and disability, an operation should be carried out for its removal.——*Comminuted fractures.*—The patient was shot in the wrist by a bullet, causing a compound fracture of radius and ulna. The wound was explored, and a large number of small pieces of bone and cloth taken away. After this it healed well, with satisfactory union of the bones in good position. Unless comminuted fractures of the bones due to bullet wounds are early and thoroughly explored and all foreign bodies, such as pieces of cloth, removed together with all loose fragments of bone, sinuses may persist for many years, causing much trouble and giving rise to many long and difficult operations for the removal of sequestra. Expectant treatment in this class of case is bad surgery. Every comminuted fracture due to a bullet wound should be thoroughly explored at as early a date as possible. The following is another example of this frequent class of case. *Severe compound fracture of the tibia and fibula.*—This man was wounded in the leg at about 100 yards range. Both of the bones of the leg were much comminuted. The essentials of treatment were carried out—namely, exploration and removal of all loose pieces, free drainage, and immobilisation of the bones. Too much attention has not been paid to the position of the fragments, as this is, at this stage, a matter of secondary importance.——*Explosive wounds.*—The first case is that of a man shot by a bullet which entered by a small circular aperture at the centre of the palm and came out at the back of the hand, making a large triangular explosive wound about 2 inches long on each side. The man naturally attributed his injury to an explosive bullet. The true explanation of this, as of nearly all so-called explosive wounds, is that enunciated in Teevan's law, which states that the entry wound is caused by the bullet alone, the exit wound by the bullet, together with pieces of broken bone. In the second case a bullet had passed right through the thigh, the entry wound at the back being a mere puncture, the exit wound in the front showing all the characteristics of an explosive wound, being large and gaping, with shreds of lacerated muscle. An X ray examination showed no fracture of the bone, though from the appearance of the wound a fracture would have certainly been expected. This case is an interesting example of a rather rare event—namely, an explosive wound without any fracture of bone. The bullet must have turned in its course through the thigh, being probably deflected by the bone without causing any bony injury, and was then forced sideways through the skin, thus giving the explosive appearance.——*Traumatic aneurysm of the common femoral artery.*—A rifle bullet passed right through this patient's leg, the wound of entry being in the lower part of the left buttock, behind, that of the exit in the front of the thigh just internal to the common femoral artery and about 2 inches below Poupart's ligament, both wounds being quite small punctures and having healed without sepsis. He was admitted four days after being struck, when there was an oval swelling about 1¾ in. by 1¼ in. over the common femoral artery, which pulsated, and over which a thrill could be felt. There was no interference with the peripheral circulation, the pulse at the ankle being similar to that on the other side, and having a rate of between 80 and 90 per minute. A definite murmur was transmitted upwards and downwards. The sac was over the femoral artery and no secondary results of pressure or deficient blood-supply were apparent. An ice-bag was applied, and rest in bed ordered. The thrill persisted only for about 10 days. One month later the sac was slightly diminished in size, the thrill had disappeared, and the patient was suffering no discomfort.——*A case of severe injury to the forearm.*—This patient presented a large irregular wound on the front of the lower part of the forearm with a similar wound at the back, daylight showing between the two. Pieces of bone and fragments of the soft parts had been blown right out. The tendons of the various muscles of the forearm were exposed, but the main vessels and nerves were intact, as shown by the fact that the circulation below was satisfactory and sensation was normal. An X ray photograph showed comminution of both bones without any extensive gaps between the ends. An attempt is being made to save the arm, although it is extremely doubtful whether this will be possible. Even if saved the limb will probably be of very little use.——*Compound comminuted fracture of the patella.*—This man was struck by a fragment of trench bomb which caused a comminuted fracture of the knee-cap. There was a non-purulent effusion into the joint cavity. Wounds from this variety of missile are now common, but they present no special features. They cause practically the same injuries as are inflicted by any piece of shell.——*Large superficial flesh wound.*—This man had in the middle of the back of his thigh a large oval wound, irregular and jagged. He said he had been struck by an explosive bullet. As this was the only wound, probably a piece of shell was the actual cause of his injury. Saline solution was used as a dressing, and this proved, as in a large number of other cases in which it was employed, very satisfactory, the wound granulating up in a perfectly healthy manner.——*Phlebitis from a blow by a piece of spent shell.*—The patient was struck in the middle of the calf by a large piece of a nearly spent shell. He had not previously had any trouble with his veins. A simple inflammation of the veins was the result, which took many weeks to subside.

VACANCIES FOR MEDICAL OFFICERS.—There remain several vacancies in the commissioned ranks of the 2nd London Sanitary Company for foreign service. Candidates holding a public health diploma will be given a preference, and on being accepted will proceed on service after a short period for training. Applications should be addressed to Captain Caley, officer commanding 2nd London Sanitary Company, Duke of York's Headquarters, Chelsea, S.W.

CONVALESCENT HOMES. — General Seely, formerly Secretary of State for War, has placed Brooke Hill, Isle of Wight, at the disposal of the Royal Flying Corps for use as an officers' convalescent home.—In order to provide a home for soldiers and sailors who are more or less permanently incapacitated for ordinary work Mr. William Cresswell Gray, of West Hartlepool, has offered to make a gift of Membland Hall, Revelstoke, South Devon, to the nation.—The buildings at Prior Park, Bath, are being fitted up as a convalescent home for men of the Canadian Expeditionary Force.—The annexe to the Star and Garter Hospital at Richmond has been completed, and on Jan. 15th a number of convalescent soldiers and sailors were brought from London in motor ambulances. The hotel itself is in course of reconstruction as a hospital for wounded men.

THE DILKE MEMORIAL HOSPITAL.—The subcommittee of the Dilke Memorial Hospital, which is to be erected near the Speech House, Forest of Dean, has just issued a report. The new institution is to provide accommodation for eight beds, exclusive of the resident staff. £3000 have been promised towards the necessary expenditure by an anonymous donor provided a similar amount is raised by the public. When this sum is obtained the Crown have offered £500 and £25 a year towards the maintenance, the cost of which is estimated at about £400 per annum.

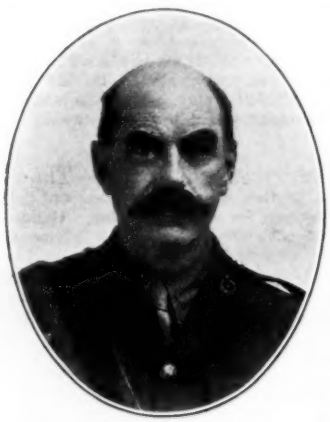
WOMEN'S MATERNITY UNIT FOR RUSSIA.—A maternity unit, organised by the National Union of Women's Suffrage Societies, has been accepted by the Russian authorities and is expected to leave shortly for Petrograd, where it will be known as the British Women's Hospital. Sixteen beds are to be provided. The staff will consist of two women medical officers, one with clinical and one with sanitary duties, a general organiser, a matron, and six nurses. The medical officer is Miss M. E. May, M.B., Ch.B., lately returned from Serbia. Russia is doing what it can to provide maternity help for the constantly increasing stream of refugees, but Russian medical women as well as men have been mobilised and are not available for civilian practice. The cost of the unit for six months is estimated at £5000. Generous donations in money and clothes have been already received from the Union of Trained Nurses, and medical instruments and supplies of any kind will be welcome. Milk foods are specially wanted. The honorary treasurer's address is at 14, Great Smith-street, S.W.

OBITUARY OF THE WAR.

ERNEST OCTAVIUS WIGHT, L.R.C.P. EDIN., M.R.C.S. ENG., D.P.H.,

COLONEL AND ASSISTANT DIRECTOR, ARMY MEDICAL SERVICE.

Colonel E. O. Wight, who was killed in action in Flanders on Dec. 19th last, at the age of 57 years, was the youngest son of the late Dr. Robert Wight, F.R.S., of Shinfield, near Reading. He was educated at Wellington College, and then entered at St. Mary's Hospital, where he was a prizeman and, as a contemporary writes, "well known for his determination to gain his object, both at his work and in sports." After obtaining his double qualification in 1881, he entered the Army Medical Service, reaching the rank of lieutenant-colonel in 1902, and retiring in 1907. On the formation of the Territorial Force he accepted the post of Deputy Assistant Director of Medical Services, Home Counties Division, in which capacity he was employed when war broke out. In April last he was offered the post of Assistant Director of Medical Services, 49th Division, which had been ordered abroad, and he was serving in this capacity at the time of his death. He was killed by a shell whilst assisting to extricate some of his motor ambulances from a dangerous position. He saw active service in the Lushai Expedition of 1892 and held the Royal Humane Society's bronze medal and two vellum testimonials for saving lives from drowning on three different occasions. One of his senior officers, in writing of him, says: "He was a man who had become proverbial as one who had no fear; he was an object of devotion and reverence to his own officers and men, ever setting them a fine example of duty. All mourn him, as they have lost not only a true friend, but also a wise director and an original and clever organiser of things for their good, one whose whole heart and soul was in his work." Of his personal attributes a medical friend says: "His kindly disposition and cheery laugh made him a great favourite with every one." Colonel Wight married, in 1893, Janet Leslie, youngest daughter of the late Peter Denny, LL.D., of Helenslee, Dumbarton. He leaves a widow and three children, two daughters and a son, who is a cadet at Dartmouth College.



WILLIAM FRANK THOMPSON, B.A. CANTAB., M.R.C.S., L.R.C.P. LOND.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant W. F. Thompson, who died in France as the result of wounds received on Dec. 28th, the son of Mr. W. W. Thompson, of Brondesbury, was educated at the Leys School, Cambridge, where he was one of a small group of boys whose strength of character and skill at games made them the Olympians of their time. Of that group he is the third to lay down his life for his country in the war. From the Leys School he went to King's College, Cambridge, where he graduated in 1909 and represented the University at lacrosse. From Cambridge he proceeded to St. Bartholomew's Hospital, where he qualified in 1912, and where during the earlier part of the war he held one of those condensed and exceedingly hard-worked house appointments which the war made necessary. Joining the Royal Army Medical Corps as honorary lieutenant in July, 1915, and gazetted to the rank of full lieutenant on Oct. 9th, he was posted to the 99th Field Ambulance, and after a period of training went with it to France, where he was mortally wounded by the bursting of a shell near his ambulance and died in hospital on New Year's Day, 1916, at the age of 28. Tall, strong, friendly, and efficient, he was marked to succeed in any branch of work he took up. In entering his name on the Roll of Honour we commemorate a loss which will be very deeply felt by his friends inside and outside the medical profession.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology held on Jan. 6th, 7th, 10th, and 11th, 96 candidates presented themselves, of whom 67 were approved and 29 were rejected. The following are the names and medical schools of the successful candidates:—

Ralph William Codrington Ball, Middlesex Hospital; George Arthur Emmanuel Barnes, University College; Anthony Blackstock, King's College; Eric John Swithin Bonnett, St. Thomas's Hospital; Martin Vincent Boucaud, St. Bartholomew's Hospital; Charles Reginald Cade, Guy's Hospital; John Douglas Magor Cardell, St. Thomas's Hospital; Thomas Carlyle, St. Bartholomew's Hospital; Nal Cheua, Middlesex Hospital; Wilfred Bayley Christopherson, St. Bartholomew's Hospital; William Arnold Clements, Birmingham University; Charles Eric Cobb, St. Thomas's Hospital; Alfred Innes Cox, Middlesex Hospital; Hedley Chave Cox, St. Bartholomew's Hospital; Carl Knight Cullen, London Hospital; Thomas Davies, B.Sc. Lond. and Wales, University College, Cardiff; Charles Joseph Christopher de Silva, King's College; Francis Bridger Dutton, M.A. Oxon., St. Thomas's Hospital; Tyrrell George Evans, St. Bartholomew's Hospital; Donald Charles Farquharson, St. Mary's Hospital; Schalom Finkelstein, Zürich and King's College; Justin Beauclerc Flamer-Caldera, L.M.S. Ceylon, Ceylon and St. Bartholomew's Hospital; Charles Arnold Rodrigo Goonewardene, Ceylon and Middlesex Hospital; Austin George Hewer, Middlesex Hospital; Christopher Langton Hewer, St. Bartholomew's Hospital; Richard Hilliard, London Hospital; Marshall Jackson, St. Bartholomew's Hospital; Jeffrey Woodward Jones, B.Sc. Vict., University College, Cardiff; Salomen Kadinsky, Brussels and King's College; Allan Wellesley Lewis, St. Mary's Hospital; Simon Sally Liebermann, St. Thomas's Hospital; Arcot Doraisawny Lokanathan, L.M.S., Madras, Madras University; Harold Octavius Long, Guy's Hospital; Albert Victor Lopes, St. Bartholomew's Hospital; Ernest Kenneth Macdonald, St. Thomas's Hospital; Thomas Clyde McKenzie, Birmingham University; Gordon Millar, St. Bartholomew's Hospital; David Mintzman, Paris and King's College; William Drew Nicol, St. Bartholomew's Hospital; Edward Nissim, Bombay and University College; Arthur Arnold Osman, Guy's Hospital; William Griffith Owen, London Hospital; Edmund Jacobsz Papenfus, St. Thomas's Hospital; William Alfred Whitehouse Parkes, Birmingham University; Arthur Llewellyn Spencer Payne, Guy's Hospital; Eugene Arthur Pearson, London Hospital; Rowland John Perkins, St. Bartholomew's Hospital; John Peter and Ernest Frank Rabey, Middlesex Hospital; Edward Douglas Thomas Roberts, St. Thomas's Hospital; John Southmead Rogers, King's College; Solomon Nahum Senitzky, B.A., London Hospital; Adolphe Gladstone Millott Severn, Guy's Hospital; Bryan Buckley Sharp, St. Bartholomew's Hospital; Bertram Leslie Slater, London Hospital; Stanley Roy Tattersall and Cyril James Thomas, St. Thomas's Hospital; Norman Beattie Thomas, B.Sc. Wales, St. Bartholomew's Hospital; Ronald Agars Walker, St. Thomas's Hospital; Austin Darley Wall, St. Bartholomew's Hospital; Arthur Elston Ward, St. Thomas's Hospital; Peter Erbin Williams, B.Sc., University College, Cardiff; Samuel Anthony Withers and Sidney Wolff, Guy's Hospital; Sydney Carver Woodhouse, London Hospital; Vyvian Deane Wyborn, King's College; and Claude Young, Middlesex Hospital.

At the quarterly examination in Practical Pharmacy held on Jan. 13th the following candidates were approved:—

Robert Aspinall-Stivala, Guy's Hospital; Hugh Woodward Barnes, King's College Hospital; Edward George Paul Bousfield, St. Bartholomew's Hospital; Clifford Viney Braimbridge, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Joseph Clinton Collins, London Hospital; William Hood Dye, L.D.S. Eng., Middlesex Hospital; Charles Arthur Lovatt Evans, D.Sc., University College Hospital; Arthur Alfred Fitch, Liverpool University; Frederick John Harvey, Birmingham University; Basil Haskins,

Otago University and St. Bartholomew's Hospital; John Frederic Haynes, Oxford University and St. Bartholomew's Hospital; Keith Masson, Cambridge University and St. Bartholomew's Hospital; George Edward Mullins and Vernon Arthur Newton, Birmingham University; Bishambhar Sahai, Calcutta Medical College and Charing Cross Hospital; Ram Sinha, Punjab University and London Hospital; Vincent Russell Smith, St. Mary's Hospital; and Geoffrey Commelline Williams, B.A. Cantab., Cambridge and Bristol Universities.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on Jan. 13th, Sir W. Watson Cheyne, the President, being in the chair. In accordance with the recommendation of the Library Committee, it was resolved that the library shall be closed at 6.30 instead of at 7 o'clock. It was resolved to contribute the sum of 50 guineas to the joint fund of the British Red Cross Society and the Order of St. John of Jerusalem. Mr. H. J. Waring was re-elected a member of the Court of Examiners. It was decided to remove from the roll of Members a Member whose name had been previously removed from the Medical Register. The President reported the delivery by Sir Anthony Bowlby, on Dec. 20th last, of the Bradshaw lecture on "Wounds in War." The best thanks of the Council were given to Sir Anthony Bowlby for his lecture and he was requested to publish it. The President reported that Sir G. H. Makins had consented to deliver the next Hunterian oration, and accordingly declared him to be appointed Hunterian Orator for 1917. The President reported that he had granted the use of the lecture theatre in December last (1) to the University of London for five lectures on Recent Work on Alimentary Toxæmias, by Dr. E. Mellanby, acting superintendent of the Brown Animal Sanitary Institution; and (2) to Major T. B. Layton, R.A.M.C., for three demonstrations to men of the 2/4 London Field Ambulance. Licences to practise dentistry were conferred upon the following three candidates:—

Bertrand Kemp Jackson, Liverpool University; and George Evan Henry Holt Phillips and John Morley Stebbings, Guy's Hospital.

ROYAL METEOROLOGICAL SOCIETY.—The annual general meeting of this society was held on Jan. 19th at the Surveyors' Institution, Great George-street, Westminster, Major H. G. Lyons, F.R.S., the President, being in the chair. The report of the council for 1915 was laid before the Fellows, and the Symons memorial gold medal, which is awarded biennially for distinguished work in connexion with meteorological science, was presented for transmission to Dr. C. A. Angot, Bureau Central Météorologique de France. The President delivered an address on the Winter Climate of the Eastern Mediterranean of considerable topical interest.

MEMORIAL SERVICE AT ST. BARTHOLOMEW'S.—A memorial service was held on Jan. 13th in the chapel of St. Bartholomew-the-Less, within the precincts of the hospital, for the 21 past or present students who have lost their lives during the last year of fighting. The service was largely attended by the governors, members of the staff, and students, as well as by the immediate relatives and friends of the deceased.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JAN. 12TH.

Medical Men and War Service.

Mr. SHIRLEY BENN asked the Under Secretary for War by whose authority the Central Medical War Committee which was now occupied in recruiting doctors to the Royal Army Medical Corps was chosen; by whom were its powers defined, and by whose nominations had its members been selected.—Mr. TENNANT wrote in reply: The Committee referred to in the question was, I am informed, appointed, and its term of reference settled, by the British Medical Association at its annual Representative Meeting in July last. It was not confined to members of that Association, and the Committee coöpted five additional members representative of universities and colleges and other medical bodies. One of the members of the Committee being a member of the War Office Medical Advisory Board was named by the Director-General to represent the Army Medical Service on the Committee. The terms of reference are as follows: "To organise the medical profession in England, Wales, and Ireland in such a way as will enable the Government to use every medical practitioner fit to serve the country in such a manner as to turn his qualifications to the best possible use to deal with all matters affecting the medical profession arising in connexion with the war and to report to the Council (of the British Medical Association)." After a conference at the War Office with the Director-General of the Army Medical Service the Committee was informed on August 9th, 1915 (in a letter which has been published), that the Director-General hoped to receive from the Committee much help in his work of providing officers for the Royal Army Medical Corps, and was glad to recognise the Committee as a medium for dealing with the great problem which faced the medical profession—namely, how to supply medical officers for the forces and at the same time to protect the needs of the civil population, and the Committee was accordingly authorised to make appeals to the profession with the object of securing those needs. A further conference took place at the War Office with the Director-General of Recruiting on Nov. 5th last on the same subject and to the same effect. As a result of these conferences this Committee, which has Local Committees in all parts of the country, has been endeavouring to procure and to coördinate offers from members of the medical profession of service in the Royal Army Medical Corps. Applications for such commissions are decided upon by the War Office, after they have been referred to this Committee for consideration in relation to the medical needs of the civil population in the areas concerned in each case, and after consultation with the Insurance Commission and where necessary with the Local Government Board and the Board of Education. Analogous arrangements exist in regard to Scotland. I should add that the War Office has received and is receiving very valuable assistance from these Committees.

Mr. SHIRLEY BENN further asked the right honourable gentleman why the medical profession was not starred, since a medical man represented a skilled worker who was not easily replaced, and whose training occasioned considerable outlay and occupied a long period of time.—Mr. TENNANT (in a written answer) replied: Special arrangements have been made with regard to the recruitment of the medical profession, with a view of ensuring all adequate attendance on the troops without unnecessarily dislocating the medical needs of the civil population. The question of starring does not arise.

Mr. SHIRLEY BENN asked the right honourable gentleman whether the Government had sanctioned the recruiting, through the agency of the Central Medical War Committee, of medical men up to the age of 45, the limit of age for the rest of the nation being 41.—Mr. TENNANT wrote in reply: The age limit referred to in the question relates to medical men applying for commissions in the R.A.M.C., and not to recruits for the combatant services, in which the age limit of 41 applies.

Recruitment of Medical Students.

Mr. SHIRLEY BENN asked the Under Secretary for War whether he was aware of the risk of cutting off at its source the supply of medical aid both for the army and for the civil population, which was incurred by recruiting first- and second-year medical students, and would he see that the practice was discontinued.—Mr. TENNANT wrote in reply: The present policy was undertaken after the most careful consideration, but the statistics bearing upon the matter are being considered.

Discharge for Physical Incapacity from the Army.

Mr. RICHARD LAMBERT asked the Under Secretary for War whether all men who were in future passed into the army as medically fit would be entitled to pensions if discharged for physical incapacity of any kind.—Mr. TENNANT replied: No, Sir; I am not prepared in this matter to go further than I went in the answer which I gave on Nov. 10th to the honourable Member for East Edinburgh.[1]

Mr. HOGGE: Has the right honourable gentleman sufficiently realised the importance of this point? Seeing that these men are accepted by the medical authorities as medically fit, will the War Office claim, in the event of physical breakdown, that they contracted the disease before they were admitted to the army?—Mr. TENNANT: I think that I gave my honourable friend a full reply on this matter the other day. It is not possible for the military department to take responsibility in the case of men who have not contracted illness in the service of the State. I am sure that in the interests of the State my honourable friend does not wish us to do anything of the kind.

Mr. HOGGE: How does my right honourable friend meet the point that these men are accepted as medically fit?—Mr. TENNANT: The disease may not have been detected; there may have been some previous illness.

Mr. CURRIE: There is a class of men who have some disease, latent no doubt, which would not have emerged had it not been for the hardships of military service. The disease does emerge owing to these hardships, and the men deserve some consideration. What is the general position taken up by the War Office in regard to such cases?—Mr. TENNANT: It is very difficult to give an answer to so

[1] THE LANCET, Nov. 20th, 1915, p. 1166.

large a question across the floor of the House. But I will say that, speaking generally, that is a medical matter, and the medical authorities would state whether they considered that the actual service of the State had been the reason for the breakdown of the man. If it had been the man would, of course, receive the pension to which he was entitled.

Military Service and the Medically Unfit.

Mr. ALDEN asked the Under Secretary for War whether single men who previous to the Derby scheme had offered themselves for enlistment and were rejected as medically unfit, and who, under the circumstances, thought it unnecessary to attest under the Derby scheme, were included in the Military Service Bill; and whether he would see to it that they were not conscripted and compelled to attest.—Mr. TENNANT answered: As the Bill stands these men are not excluded, but if their physical disability still renders them unfitted for any form of military service they cannot be held to serve.

THURSDAY, JAN. 13TH.

An Officer of the Australian Medical Corps.

Captain AMERY asked the Under Secretary for War whether Lieutenant-Colonel J. W. Barrett, Australian Medical Corps, occupied the imperial appointments of Assistant Director of Medical Services on the staff of the Director of Medical Services, Egypt, and consulting oculist to His Majesty's forces in Egypt; whether he was removed from these offices without inquiry by the Australian Government on a recommendation of the Army Council, which the general officer commanding in Egypt subsequently pointed out was due to a misunderstanding; whether a court of inquiry had been held and what was the finding of that court; and whether, if that report was favourable, the Army Council was prepared to reinstate Lieutenant-Colonel Barrett, or whether he was prepared to make any statement with regard to the value of the work done by Lieutenant-Colonel Barrett.—Mr. TENNANT replied: I believe the facts as stated in the first two parts of the question are substantially correct. A court of inquiry was held in Egypt in October last year, and in its finding the court exonerated Lieutenant-Colonel Barrett and spoke in the highest terms of his work. The High Commissioner of the Commonwealth was informed that there was no objection to Lieutenant-Colonel Barrett being employed in Egypt or elsewhere provided that the Government of the Commonwealth concurred.

Soldiers and Surgical Boots.

Colonel WHITE asked the Under Secretary for War whether he was aware that there was a considerable number of young soldiers who were either unfitted for drafts or had to be discharged from the service owing to their suffering from hammer toes or similar disability; and whether he would consider the advisability, in the less aggravated cases, of having these men fitted with surgical boots which might render them fit for service in any event with a non-combatant unit.—Mr. TENNANT wrote in reply: In the opinion of my medical advisers the issue of surgical boots to the men mentioned is not likely to render them fit for service, and even if such boots were issued it would be quite impossible to replace them if they were lost or worn out on service.

Vaccination Statistics.

Mr. PATRICK WHITE asked the Parliamentary Secretary to the Local Government Board whether he could state the number of children vaccinated in Great Britain in the years 1913, 1914, and 1915, respectively, and the number exempted on account of conscientious objections on the part of their parents; and whether any and, if so, how many prosecutions were instituted against parents for non-compliance with the law during each of the years mentioned.—Mr. HAYES FISHER answered: The number of successful vaccinations for which vaccination officers received certificates at all ages in England and Wales was in 1913, 430,470; and in 1914, 404,616; and the number of declarations of conscientious objection to vaccination in 1913, 308,235; and in 1914, 321,313. I cannot give the actual number of children vaccinated nor the figures for 1915, which are not yet available. As to the figures for Scotland a question should be addressed to the Secretary for Scotland. It appears from the criminal statistics for the year 1913 that 146 persons were proceeded against in that year for offences against the Vaccination Acts. The statistics for 1914 and 1915 have not yet been published.

TUESDAY, JAN. 18TH.

The Eyesight of Recruits.

Sir JOHN ROLLESTON asked the Under Secretary for War whether the War Office was aware that only a medical eye specialist was capable of deciding whether a would-be recruit with defective vision was or was not suitable for military service, seeing that the sight tests did not discriminate between disease and errors of refraction corrigible by lenses; and why the services of medical eye specialists were not made use of by the War Office.—Mr. TENNANT wrote in reply: Medical eye specialists are made use of by the War Office in cases where their services are considered to be required.

Sir JOHN ROLLESTON asked the right honourable gentleman whether it was the case that the War Office did not recognise the certificate of medical eye specialists with respect to the sight of would-be recruits.—Mr. TENNANT replied: The certificates of medical eye specialists are treated in exactly the same way as certificates from any other medical men. They may aid the medical examiner of recruits, but they cannot absolve him from his responsibility in passing or rejecting the recruit. In cases of doubtful vision the recruit will be referred for the opinion of an official medical eye specialist.

Sir JOHN ROLLESTON also asked the right honourable gentleman whether he would consider the advisability of recruits who failed to respond freely to the sight tests being at once sent to a medical eye specialist to be examined as to their visual fitness for enlistment, and to obtain the needed prescription if glasses would bring the sight up to the required standard.—Mr. TENNANT answered: Special ophthalmic surgeons are available in all commands to whom cases of doubt or difficulty will be referred.

WEDNESDAY, JAN. 19TH.

Medical Students and Military Service.

During the debate in Committee on the Military Service Bill, Mr. J. H. THOMAS moved an amendment that a certificate of exemption might be granted to a man "on the ground that he is a medical student who can more advantageously complete his medical training in order to render national service as a medical practitioner."

Mr. TENNANT (Under Secretary for War said that it was proposed to continue the War Office policy that students in the fourth and fifth years should be left to continue their studies. That was to say, those who had passed the examination in the third year would be free. Those who failed to pass the examination in the third year would not be considered in that category. The first- and second-year students would be held for service in the forces of the Crown. The Government was carefully examining the whole position with regard to the possible shortage of medical men in the future. It had for that purpose enlisted the services of Sir Donald MacAlister, President of the General Medical Council, who had undertaken a careful survey of the whole situation in the medical schools and was going to report to the Government on the subject.

Mr. SNOWDEN expressed regret that the Government was not prepared to take a longer view of the situation.

The amendment was withdrawn.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ANDERSON, C. B. C. (Final Year Student), has been appointed to the Surgical Out-patient Department at the Edinburgh Royal Infirmary.

BLAIR, C. E., M.B., Ch.B. Edin., has been appointed Resident Physician at the Edinburgh Royal Infirmary.

BURNET, J., M.D. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Edinburgh, South District of the county of Edinburgh.

CARRUTHERS, G. J. R., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Edinburgh, North District of the county of Edinburgh.

FERGUSON, H. F., M.B., Ch.B. Edin., has been appointed Resident Physician at the Edinburgh Royal Infirmary.

GALT, H. M., M.B. Glasg., D.P.H., Captain R.A.M.C. (T.F.), has been appointed Additional Examiner in Medical Jurisprudence and Public Health for Degrees in Science and Medicine at Glasgow University.

GIBSON, A. KEITH (Final Year Student), has been appointed Resident Surgeon at the Edinburgh Royal Infirmary.

MALCOLM-SMITH, G. L. (Final Year Student), has been appointed Clinical Assistant at the Edinburgh Royal Infirmary.

PRENTICE, ADAM (Final Year Student), has been appointed Resident Surgeon at the Edinburgh Royal Infirmary.

PURNELL, CHARLOTTE, M.B., B.S. Durh., has been appointed Senior House Surgeon at the Bolton Infirmary.

SLOAN, SAMUEL, M.D. Glasg., has been appointed Examiner in Midwifery and Diseases of Women to the University of Glasgow.

SMELLIE, JAMES M. (Final Year Student), has been appointed Resident Physician at the Edinburgh Royal Infirmary.

WRIGHT, H. D. (Final Year Student) has been appointed Resident Surgeon at the Edinburgh Royal Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ABERGAVENNY, MONMOUTH COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary £7 7s. per week, with board, apartments, and attendance.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £180 per annum, with board and laundry.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, attendance, &c.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, residence, and washing.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, apartments, and laundry.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and laundry.

DUNROSSNESS PARISH.—Medical Officer and Vaccinator. Worth over £600.

GRAVESEND HOSPITAL.—House Surgeon. Liberal salary, with board, residence, and washing.

GREENWICH UNION INFIRMARY AND WORKHOUSE.—Assistant Medical Officer, unmarried. Salary £175 per annum, with apartments, rations, and washing.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary 6 guineas a week, with board, lodging, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—Resident Medical Officer. Salary £150 per annum, with board, residence, and laundry.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

LIVERPOOL, BROWNLOW HILL INSTITUTION.—Resident Assistant Medica Officer. Salary at rate of £300 per annum, with rations, &c.

LIVERPOOL ROYAL INFIRMARY.—Gynæcological Surgeon.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Senior and Junior House Surgeon.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

MORPETH, 2ND LINE WELSH BORDER MOUNTED BRIGADE.—Medical Officers. Pay and allowances as in Regular Army, with outfit and camp kit grants.

PRESTON, LANCS. COUNTY ASYLUM, Whittingham.—Locum Tenens, unmarried. Salary £7 7*s.* per week, with apartments, board, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Female District Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, residence, and washing.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician for six months. Salary £100 per annum, with board, residence, and washing.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Curator of Museum.

SCARBOROUGH HOSPITAL AND DISPENSARY.—House Surgeon. Salary as arranged, with residence, board, &c.

SHEFFIELD CITY TUBERCULOSIS DISPENSARY.—Female Assistant Medical Officer. Salary £350 per annum.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Senior Resident Medical Officer for three months. Salary at rate of £250 per annum, with board, lodging, and washing.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Female House Surgeon. Salary £150 per annum, with board, apartments, and washing.

WREXHAM INFIRMARY.—Resident House Surgeon. Salary £125 per annum, with board, lodging, and laundry.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Barrow-in-Furness, in the county of Lancaster; and at Staplehurst, in the county of Kent.

Births, Marriages, and Deaths.

BIRTHS.

CANNEY.—On Jan. 17th, at St. Andrew's-street, Cambridge, the wife of J. R. Campbell Canney, M.D., B.C.Cantab., Captain, R.A.M.C. (T.F.), of a son (prematurely).

DAW.—On Jan. 20th, at Clarendon-road, Leeds, the wife of S. W. P. Daw, F.R.C.S. Eng., Captain, R.A.M.C. (T.F.), of a son.

MARRIAGES.

HODGSON—LAIDLER.—On Jan. 18th, at St. Jude's Church, Bradford, Captain Gordon A. Hodgson, R.A.M.C., to Marion Unthank, eldest daughter of Francis Laidler, of Marlborough-road, Bradford.

YOUNG—BROUGHTON.—On Jan. 11th, at St. George's United Free Church, Edinburgh, David Pryde Young, M.B., C.M. Edin., to Helen Gwladys, daughter of Mrs. Broughton and the late Robert David Broughton, of Fradswell Hall, Stafford, and Lindridge, Bournemouth.

DEATHS.

BOAM.—On Jan. 10th, at Great Brook-street, Birmingham, Herbert Boam, M.R.C.S., L.R.C.P. Lond., after a brief illness.

PARNELL.—On Jan. 9th, at Sydenham, suddenly, the result of an accident, Mary Emily Langston, the wife of Gerald Crécy Parnell, M.R.C.S.Eng., &c., of "Bodowen," Honor Oak-road, Forest Hill, S.E.

WILLIAMS.—On Jan. 16th, 1916, Herbert Williams, M.D. Lond., of 7, Ulundi-road, Blackheath, Medical Officer of Health for the Port of London, son of Alderman T. H. Williams, J.P., of Weymouth. Interred at Melcombe Regis Cemetery, Weymouth.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL MEN AND THE ALLEGED SHORTAGE OF PETROL.

THE importers and proprietors of a well-known motor spirit have issued a circular in which they regret the inconvenience which may be caused to their clients by any temporary difficulties occurring in the delivery of their orders through the necessary attention to Government demands. They go on to ask their clients to limit their requirements to a minimum, to use every possible economy in the quantities consumed, and to refrain from the retention of a stock larger than is absolutely necessary. The medical profession is entirely in sympathy with any movement for economy in the use of petrol. Anyone who has seen the pleasure traffic which still prevails on Sundays on certain of the big roads leading into and out of London must know that there is reckless use of a commodity which should be carefully saved for national purposes. But it is equally evident that the petrol used by a medical man serves a direct national purpose, and that he should have the preference over the mere pleasure-seeker or the man who uses his car simply to escape the discomforts of railway travelling. All this is indeed so obvious that we should have hesitated to mention it, were it not that we have been assured that medical men have received these circulars without any accompanying statement that in case of an actual shortage of petrol a preference would be given to those requiring it for medical purposes.

HOME-MADE EAU-DE-COLOGNE.

WE have received from the lady superintendent of the Nursing Home, Shear Bank-road, Blackburn, a sample of eau-de-Cologne made by herself from an old French prescription. The prescription is evidently a good one, as the scent prepared brings to mind the classic fragrance of this article. The product demonstrates that eau-de-Cologne can be produced at home which is in no way inferior to the familiar article. The profit on sales is to be handed over to a fund in aid of sick or wounded sailors and soldiers.

THE UNIVERSITY OF THE PHILIPPINES.

BULLETIN No. 5 of the University of the Philippines contains a history of the College of Medicine and Surgery which was established by the Government of the Philippine Islands in 1907. This institution is the first department of the future University of the Philippines, and was opened for class work and instruction in 1910. Clinical instruction is given in the Philippine General Hospital, which has about 300 beds, and also in the Free Dispensary. Instruction in dangerous communicable diseases is given at the San Lazaro hospital for infectious diseases with its departments for incurable tuberculosis, small-pox, diphtheria, plague, cholera, and other diseases. There are also available for teaching purposes the San Juan del Monte Tuberculosis Sanatorium, the institution for the feeding and care of abnormal and undeveloped children, and the tuberculosis free dispensaries of the city of Manila. In all these institutions there is an abundance of clinical material. Students who are not candidates for degrees granted by the College of Medicine and Surgery may be admitted to the various courses. Full particulars may be obtained from the Dean, College of Medicine and Surgery, Manila.

OPEN-AIR TREATMENT IN A SLUM.

REPORTING on the condition of the Brady-street area, the public health committee of the Bethnal Green borough council state: "We understand that, for a time, some families were in occupation of rooms the rear walls of which had been removed, such families being thus exposed to the inclemency of the weather."

N. G., M.D.—The following references to "gas" poisoning have been published in THE LANCET:—Asphyxiating Gases in Warfare, May 1st, 1915 (p. 938). Chlorine Poisoning, May 15th, 1915 (p. 1036). On the Use of Atropine, Dr. Douglas V. Cow, May 29th, 1915 (p. 1147). On the Use of Atropine in Gassed Patients, Dr. Ida C. Tengely, June 5th, 1915 (p. 1203). On the Effect of Atropine, Dr. Douglas Cow, June 12th, 1915 (p. 1259). On the Use of Oxygen, Dr. J. D. Mortimer, June 12th, 1915 (p. 1262). French Observations on the Effects of the Irritant Gases Used by the Germans, June 19th, 1915 (p. 1302). Precautions against Asphyxiating Gases (Parliamentary Intelligence), June 19th, 1915 (p. 1317). The Action of Chlorine on the Blood, Mr. H. Wilson Hake, July 10th, 1915 (p. 86). What is the Gas? Dr. Lennox Wainwright, July 24th, 1915 (p. 198). Professor Leonard Hill at Medical Society of London, Dec. 4th, 1915 (p. 1248)

M. O. H. has complained to the water engineer that sheep droppings frequently get into the reservoir which supplies the town with drinking water, and has been met with the remark: "We don't mind about sheep." The reply indicates that the water authority is too phlegmatic. The pollution of water-supplies with manurial matters of any kind is most objectionable. All responsible water authorities hold that the land nearest to reservoirs should not be manured, and sheep and cattle should be prevented from gaining access.

J. S., Captain, R.A.M.C.—The following can be safely recommended: *Physiology*—"Principles of Human Physiology." By E. H. Starling, M.D., F.R.S. Second edition. 21*s.* net. (London: J. and A. Churchill.) For revision: "Essentials of Physiology." By F. A. Bainbridge, M.D., D.Sc., and J. A. Menzies, M.D. 1914. Price 10*s.* 6*d.* net. (London: Longmans, Green and Co.) "Cole's Physiological Chemistry." (Cambridge: W. Heffer and Sons.) *Anatomy*—"Cunningham's Manual of Practical Anatomy." Revised and edited by Arthur Robinson. In two parts. 1914. (London: Henry Frowde and Hodder and Stoughton.) "Human Embryology and Morphology." By Arthur Keith, M.D., F.R.S. (London: Baillière, Tindall, and Cox); or "A Manual of Human Embryology, by J. Playfair McMurrich. (London: Baillière, Tindall, and Cox.) "Landmarks and Surface Markings of the Human Body." By L. B. Rawling, B.C., F.R.C.S. Price 5*s.* net. (London: H. K. Lewis and Co., Limited).

R. L.—We are in agreement with the points our correspondent desires to make, but it seems to have escaped his attention that 143 schools, colleges, and institutes are already recognised as teaching institutions for the ancillary sciences by the licensing bodies and approved by the General Medical Council. A list of these is included in the "Regulations of the Council in regard to the Registration of Medical and Dental Students," published by Constable and Co., London. The last issue is dated June, 1915.

H. W., M.B., B.S., may safely consult one or more of the following books: "Introduction to Study of Hypnotism," Dr. H. E. Wingfield. 5*s.* net. (Baillière, Tindall, and Cox, London.) "Hypnotism and Treatment by Suggestion," Dr. J. Milne Bramwell. 5*s.* net. (Cassell and Co., London.) "Hypnotism and Suggestion," Dr. Lloyd Tuckey. 10*s.* 6*d.* net. (Baillière, Tindall, and Cox, London.)

A. V. F.—Some of the suggestions have already been put into practice. In an account of the work of field ambulances published in the *British Medical Journal* some weeks ago, bathing establishments behind the lines were described at which washing of clothes and disinfection were carried out on a large scale, dealing with an average of nearly 1000 men a day for many successive weeks.

A. F. H.—Before the war we understand that the exact opposite prevailed, and advancement was more rapid and certain in our correspondent's service, where a lieutenant-colonelcy could be counted on after 20 years instead of an indefinite wait for a vacancy.

R. G.—Certainly not. The procedure is perfectly well known to every practitioner, and it is necessary to take the opinion of the medical adviser to whom the patient is already well known.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 19th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 13	29·894	N.W.	...	67	47	44	41	45	Cloudy
,, 14	30·264	N.	...	57	47	36	35	36	Fine
,, 15	30·072	W.	...	58	50	36	44	47	Cloudy
,, 16	30·130	W.	...	52	46	40	39	42	Overcast
,, 17	29·944	S.W.	...	52	52	40	43	45	Raining
,, 18	29·864	S.W.	0·05	60	53	45	51	51	Cloudy
,, 19	30·060	S.W.	0·01	56	51	45	46	47	Cloudy

The following magazines, journals, &c., have been received:—Journal of Tropical Medicine and Hygiene, American Journal of Roentgenology, Nordiskt Medicinskt Arkiv, Canadian Journal of Medicine and Surgery, Cleveland Medical Journal, Birmingham Medical Review, Canadian Medical Association Journal, Homœopathic Recorder, Guy's Hospital Gazette, Therapeutic Gazette, Edinburgh Medical Journal, Public Health, Revue de Chirurgie, Revue de Médecine, Medical Review, Cleveland Medical Journal, Annals of Tropical Medicine and Parasitology, Quarterly Journal of Experimental Physiology, Journal of State Medicine, Medical Officer, Hospital Gazette, Medical Journal of South Africa, Symons's Meteorological Magazine, Journal of Hygiene, British Dental Journal, Journal of Nervous and Mental Disease, Modern Hospital, Journal of the Royal Navy Medical Society.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Lord Rayleigh, O.M.: The Theory of the Helmholtz Resonator.—Prof. J. Joly: A Collision Predicator.—Dr. C. Chree: Discussion of Kew Magnetic Data, especially the Diurnal Irregularities of Horizontal Force and Vertical Force, from Ordinary Days of the Eleven Years 1890 to 1900.—Mr. G. W. Walker: A Portable Variometer for Magnetic Surveying.—Prof. J. C. McLennan: On the Single Line Spectrum of Magnesium and Other Metals and their Ionising Potentials.—Mr. F. Tinker: The Microscopic Structure of Semipermeable Membranes, and the Part played by Surface Forces in Osmosis (communicated by Sir O. Lodge).—Mr. E. Newbery and Mr. J. N. Pring: The Reduction of Metallic Oxides with Hydrogen at High Pressures (communicated by Sir E. Rutherford).—Mr. H. Levy: Discontinuous Fluid Motion Past a Curved Boundary (communicated by Prof. A. E. H. Love).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Jan. 24th.

ODONTOLOGY (Hon. Secretaries—F. R. Smyth, F. N. Doubleday, J. Howard Mummery): at 8 P.M.

Paper:
Mr. W. Courtney Lyne (communicated by Mr. Montagu F. Hopson): The Significance of the Radiographs of the Piltdown Teeth. Professor Arthur Keith, Professor A. S. Underwood, and Dr. Smith Woodward will take part in the discussion.

Casual Communication:
Mr. Rushton: Total Absence from Deciduous and Permanent Dentition.

Tuesday, Jan. 25th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 8.30 P.M.

War Discussion:
A Special Discussion on the "Functional Neuroses caused by Shell Shock without Visible Signs of Injury" will be opened by Dr. Mott, F.R.S., and will be adjourned to the Meeting of Neurology on Thursday, Jan. 27th (see notice below).

N.B.—Members of other Sections interested in the subject are specially invited to be present.

Thursday, Jan. 27th.

NEUROLOGY (Hon. Secretaries—H. Campbell Thomson, C. M. Hinds Howell): at 8.30 P.M.

The Special Discussion on the "Functional Neuroses caused by Shell Shock without Visible Signs of Injury" (see above, Section of Psychiatry) will be continued.

The chair will be taken by the President (Dr. James Taylor), and Dr. Batten, Dr. Farquhar Buzzard, Dr. J. S. Collier, Dr. E. G. Fearnsides, Dr. Wilfred Harris, and Dr. Campbell Thomson will speak.

Members wishing to take part in the discussion should communicate at once with Dr. Hinds Howell, 145, Harley-street, W.

Friday, Jan. 28th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—J. D. Rolleston, A. S. Blundell Bankart, Sidney Gilford): at 4.30 P.M.

Cases:
Mr. Sydney Stephenson: Dyspituitarism in a Girl of 15 Years.
Dr. J. D. Rolleston: Transient Hemiplegia in Diphtheria with Lesions of the Finger-nails.
Dr. J. L. Bunch: Papillomatous Growth in a Scar.
Dr. Eric Pritchard: (?) Cerebral Tumour in a Child.
Dr. C. O. Hawthorne: Double Optic Neuritis.

Specimens:
Dr. E. C. Williams: Heart showing Infiltration by Large Round-celled Sarcoma.
Miss M. B. Stogden and Miss J. H. Younger (introduced by Dr. Eric Pritchard): Congenital Double Hydro-ureter.

Short Paper:
Dr. J. Porter Parkinson: Nephritis without Albuminuria.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W

TUESDAY.—5 P.M., Exhibits. Short Communication:—Sir John Collie: Short Account of a Criminal Case. Was the Plea of "Qualified Responsibility" Justifiable?

HUNTERIAN SOCIETY, Guy's Hospital, London Bridge, S.E.

WEDNESDAY.—4 P.M., Clinical Afternoon. Cases of Clinical Interest will be shown by, or for, members of the staff of Guy's Hospital.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. J. L. Bunch: Some Common Skin Diseases.
THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Diagnosis and Treatment of the late Eruptions of Syphilis.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY.—3 P.M., Prof. C. S. Sherrington: The Physiology of Anger and Fear. (Lecture II.)
FRIDAY.—5.30 P.M., Dr. L. Hill: The Science of Clothing and the Prevention of Trench Feet.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1915 were given in THE LANCET of Dec. 25th, 1915.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1915 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are now ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 4*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

ALTERATION OF INLAND SUBSCRIPTION RATES.

OWING to the alteration in the Inland Newspaper Postal rate, the postage on each copy of THE LANCET will in future be 1*d.*, and sometimes 1½*d.*

The revised Inland Subscription rates are:—

One Year	£1	3	3
Six Months	0	13	8
Three Months	0	7	0

The rates for the Colonies and Abroad (thin paper edition) will be as usual:—

One Year	£1	5	0
Six Months	0	14	0
Three Months	0	7	0

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

ADVERTISEMENT RATES.

Books and Publications ... ...
Official and General Announcements
Trade and Miscellaneous Advertisements and Situations Vacant ...
Five lines and under ... 4*s.* 0*d.*
Every additional line, 6*d.*

Situations Wanted: First 30 words, 2*s.* 6*d.*
Per additional 8 words, 6*d.*

Quarter Page, £1 10*s.* Half a Page, £2 15*s.*
Entire Page, £5 5*s.*
Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

THE Secretary of the War Office has issued the following order:—

The public are informed that on and after Saturday, November 6th, newspapers, magazines, books, and other printed publications (other than trade circulars) will not be sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. Persons desiring to send newspapers, &c., to neutral European countries should, therefore, give their orders for execution to publishers or newsagents who have obtained such permission.

The Publisher of THE LANCET has obtained the required permission of the War Office, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Dr. N. B. Alkota, Kafr-Sakr; Dr. E. L. Ash, Lond.; Dr. R. W. Allen, Lond.; A Friend; *American Journal of Public Health*, Boston; Mrs. Argles, Wanstead; Captain R. C. Abercrombie, R.A.M.C., Boulogne; Anglo-American Pharmaceutical Co., Lond.; Dr. T. D. Acland, Lond.; *Answers*, Lond., Editor of; Dr. J. L. Aymard, Johannesburg.

B.—Mr. H. Butterfield, Northampton; Barrow-in-Furness Corporation, Clerk to the; Bristol Royal Hospital for Sick Children, Secretary of; Lieutenant-Colonel Brogden, R.A.M.C., France; British Drug Houses, Lond.; Messrs. W. H. Bailey and Son, Lond.; Mr. J. Beth, Amiens; Mr. Harold Barwell, Lond.; Dr. Dudley Buxton, Lond.; Mr. J. Birt, Lond.; Sir John Byers, Belfast; Dr. F. E. Batten, Lond.; Messrs. Burroughs Wellcome and Co., Lond.; Messrs. Butterworth and Co., Lond.; Mr. T. Bates, Netley; Dr. J. Blumfeld, Lond.

C.—Dr. Aldo Castellani, Lond.; Messrs. J. and A. Churchill, Lond.; Messrs. Condy and Mitchell, Lond.; Lieutenant-Colonel H. Cocks, R.A.M.C., Ross; Dr. G. Carter, Sheffield; *Colonial Medical Press*, Boston; *Chester Courant*, Proprietors of; Dr. R. G. Canti, Lond.; Captain G. H. Colt, R.A.M.C.(T.); Miss Grace Campling, Brighton.

D.—Messrs. Detken and Rocholl, Naples; Dr. H. Dutch, Lond.; Messrs. W. Dawson and Sons, Mr. M. J. A. Dickinson, Millom; Durham County Asylum, Winterton, Clerk to the.

E.—Messrs. W. Edwards and Son, Lond.; Captain T. P. Edwards, R.A.M.C., France; *Essex Weekly News*, Chelmsford, Manager of; Dr. W. Ewart, Lond.; Edison and Swan United Electric Light Co., Lond.; Dr. John Eyre, Lond.

F.—Dr. Alfred R. Friel, Bournemouth; Ferrocarril de Antioquia, Medellin; Mr. W. M. Fletcher, Lond.

G.—Dr. S. N. Galbraith, Newark; Mr. H. Bellamy Gardner, Lond.; Dr. Professor Galli, Bordighera; General Medical Council, Lond.; Acting Registrar of; Dr. W. Grant, Mardy; Lieutenant J. W. Gilbert, R.A.M.C., France; Dr. N. Glegg, Datchet; Mr. S. A. F. Graham, Lond.; Mr. H. H. G. Grattan, Lond.; Gravesend Hospital, Secretary of; Mr. H. J. Gauvain, Lond.

H.—Holborn Surgical Instrument Co., Lond.; Mr. R. Hitchins, Lond.; Lady Hewitt, Lond.; Dr. A. H. Hogarth, Aylesbury; Dr. Albert Hopkinson, Withington; Dr. F. Hernaman-Johnson, Lond.; Harrogate Corporation Baths, Manager of; Dr. A. C. Houston, Lond.; Dr. W. Jobson Horne, Lond.; Dr. F. R. Holbrook, France; Mr. W. J. Hicks, Lond.; Dr. B. Rivaz Hunt, Brighton; Professor W. D. Halliburton, Lond.; Hotpoint Electric Heating Co.

I.—Institute of Hygiene, Lond.; Illuminating Engineering Society, Lond., Hon. Secretary of.

J.—Messrs. Johnson, Matthey, and Co., Lond.; Lieutenant-Colonel H. P. Jervis, I.M.S. (retired), Bournemouth; Mr. W. Jones, Liverpool.

K.—Miss Kerr, Cairo; Messrs. D. J. Keymer and Co., Lond.

L.—Dr. T. Laffan, Cashel; Messrs. H. K. Lewis and Co., Lond.; Liverpool Guardians, Clerk to the; Dr. T. D. Luke, Peebles; Dr. P. W. Lam, Lond.; Leeds Public Dispensary, Secretary of; Dr. K. K. Liang, Kirin, China; Dr. E. W. Leersum, Amsterdam; London Throat Hospital, Secretary of; London Dermatological Society; Messrs. Lee and Martin, Birmingham; Liverpool Medical Institution, Librarian of.

M.—Mr. S. Mozumder, Craghead; Mr. A. Maloine, Paris; Maltine Manufacturing Co., Lond.; Messrs. C. Mitchell and Co., Lond.; Dr. J. L. Martin, Chelmsford; Messrs. Methuen and Co., Lond.; Dr. A. McCall, Lond.; Messrs. Macmillan and Co., Lond.; Lieutenant-Colonel B. Myers, N.Z.M.C., Walton-on-Thames; *Midland Counties Herald*, Birmingham, Manager to the; Mrs. Moody, Hull; Major C. S. Myers, R.A.M.C.; Mr. John Furse McMillan, Sandown.

N.—Mr. J. Neumann, Lond.; National Health Insurance Commissioners, Lond., Secretary to; Mr. F. Newland-Pedley, Lond.; Dr. F. M. Neild, Shanghai; North Riding Infirmary, Middlesbrough, Secretary of; Messrs. F. Newbery and Sons, Lond.

O.—Dr. C. O'Gorman, Bristol; Dr. W. Overend, Lond.; Captain F. A. Osborn, R.A.M.C., France; Major-General Sir Desmond O'Callaghan, Lond.

P.—Mr. George Peachey, Lond.; Dr. L. Phillips, Giza; Dr. Edward S. Prest, New Cumnock; Dr. John Porter, Lond.

Q.—Queensland, Inspector of Hospitals for the Insane, Melbourne.

R.—Dr. C. Riviere, Lond.; R. W. S.; Messrs. Reynell and Son, Lond.; Miss L. Russell, Buxted; Messrs. Richardson and Co., Lond.; Mr. F. Rawlings, Manchester; Royal Microscopical Society, Lond.; Dr. C. Roper, Truro; Mr. R. P. Rowlands, Lond.; Mr. T. Redington-Roche, Dublin; Dr. Jules Regnault, Toulon; Dr. J. Maxwell Ross, Dumfries; Royal Meteorological Society, Lond., Secretary of.

S.—Dr. H. Scurfield, Sheffield; Messrs. Spiers and Pond, Lond.; Dr. Florence A. Stoney, Lond.; Lieutenant-Colonel A. W. Sheen, R.A.M.C.(T.); Messrs. Stooke-Vaughan, Taylor, and White, Lond.; Dr. E. Shepheard, Lond.; Southampton Corporation, Clerk to the; Mr. J. Harris Stone, Lond.; Mr. G. F. Stone, Bristol; Dr. J. D. Speld Sinclair, Lond.; Dr. B. P. Sormani, Amsterdam; Messrs. G. Street and Co., Lond.; Dr. K. Sakagami, Lond.; Messrs. W. H. Smith and Son, York; Messrs. Sells, Lond.; Dr. F. E. Shipway, Lond.; Dr. J. E. Snodgrass, Raphoe; Professor A. E. Shipley, Cambridge; Miss Janet E. St. Clair, Lond.; Society for the State Registration of Trained Nurses, Lond.; Dr. C. E. Sundell; Miss J. E. St. Clair, Lond.; Lieutenant Russell V. Steele, R.A.M.C.

T.—Captain E. T. Tatlow, R.A.M.C., France; Dr. J. Teare, Wakefield; Mr. C. P. Tindall, Chiseldon; Dr. Kenneth Taylor, Ris-Orangis; Dr. C. H. Thatcher, Edinburgh; Messrs. Taraporevala, Sons, and Co., Bombay; Mrs. Tatlow, Adel.

U.—Ulster Bank, Dublin, Manager of.

V.—Lieutenant J. A. Venning, R.A.M.C., Chalfont St. Giles; Messrs. C. A. Vandervelt and Co., Lond.; Mr. George Varley, Minehead; Mr. Albert H. Varley, Lond.

W.—Messrs. J. Wright and Sons, Bristol; Dr. C. P. White, Lond.; Wrexham Infirmary, Secretary of; Captain A. C. Williams, R.A.M.C.; Dr. H. S. Walker, Louth; Dr. E. Ainley Walker, Oxford; Professor G. Sims Woodhead; Mr. C. Hamilton Whiteford, Plymouth; Mr. Arthur Woods, Sutton; Dr. Claude L. Wheeler, New York; Messrs. W. Wood and Co., New York; Dr. P. Watson Williams, Bristol; Colonel Cuthbert Wallace, A.M.S., France; Dr. Samuel West, Lond.

Y.—Mrs. Yourell, St. Ann's Hill; York Medical Society, Sec. of.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. C. W. Allen, Lond.; Messrs. Armour and Co., Lond.; Messrs. T. and M. Armstrong, Lond.; Aberdeen County Insurance Committee, Clerk to the; Mr D. Armour, Lond.

B.—Dr. F. C. Brodie, Wootton; Dr. R. G. Barlow, Liverpool; Dr. C. Bradford, Acocks Green; Messrs. Bedford and Co., Lond.; Belfast District Lunatic Asylum, Clerk to the; Messrs. Burgersdijk and Mermans, Leyde; Dr. M. Bainbridge, Makerston; Dr. J. B. Blaikie, Lond.; Messrs. Bishop, Lond.; Burton-on-Trent Corporation, Accountant to the; Mr. F. J. F. Barrington, Blandford; Brecon and Radnor Asylum, Talgarth, Clerk to the; Beckett Hospital, Barnsley, Matron of; Surgeon J. D. Byrd, R.N., Lond.

C.—Mr. J. C. Creeswell, Coventry; Charing Cross Hospital Medical College, Lond., Secretary of; Dr. H. C. Colman, Broughton Ferry; Mr. Cowan, Glasgow; Surgeon R. E. Cameron, R.N., Lond.; Lieutenant F. Copeland, R.A.M.C., Southampton; Mr. W. H. Coates, Hucknell Torkard; Messrs. Crossley and Co., Lond.; Dr. L. M. S. Clark, Coventry; Messrs. Cowie and Co., Lond.; Dr. G. Cockcroft, Middleham; Mr. L. D. Cohen, Lond.; Dr. L. Colebrook, Lond.; Dr. G. Carter, Sheffield; Miss Cummins, Lond.; Dr. T. J. P. Crean, Clonmel; Lieutenant G. H. Culverwell, R.A.M.C., Reading; Cheshire County Council, Chester, Clerk to the; Messrs. G. Curling, Wyman, and Co., Lond.; Mr. H. G. Compton, Preston.

D.—Dr. R. Donaldson, Reading; Dr J. F. de Villiers, Vrede; Mr. S. F. d'Azevedo, Foz do Douro; Mr. T. Dixon, Lond.; Dr. G. S. Dodgson, Wolsingham; Derbyshire Royal Hospital for Sick Children, Derby, Secretary of; Captain J. H. Dible, R.A.M.C., France; Professor S. Delépine, Manchester; Denver Chemical Manufacturing Co., Lond.; Mr. E. Down, Devonport; Dr. W. Donaldson, Flotta; Mr. T. N. Darling, France; Mr. W. Dewar, Beamish; Mr. A. S. Daly, Lond.; Derbyshire Royal Infirmary, Derby, Secretary of; Messrs. Dowie and Marshall, Lond.

E.—Mr. R. B. Eccles, Driffield; Messrs. Evans and Witt, Lond.; Mr. F. G. Ernst, Lond.; E. M. P.

F.—Mr. E. G. Foote, Sedbergh; Messrs. Fannin and Co., Dublin; Mr. F. G. Fenton, Torquay; Dr. D. French, Ballygar; Captain Dudley Forde, R.A.M.C., Dublin.

G.—Dr. Paul C. Gibson, Lond.; Messrs. A. H. Grantham and Co., Reading; Sir Rickman Godlee, Bart., Lond.; Messrs. Grindley and Co., Calcutta; Great Yarmouth Corporation, Clerk to the; Dr. M. Grabham, Madeira; Messrs. Gordon and Gotch, Lond.; G. H. P.; Captain R. L. Gamlen, I.M.S., Crediton.

H.—Dr. C. E. Hardyman, Norwich; Mr. E. Hemsted; H. B. H.; Mrs. Hare, Lond.; Staff-Surgeon H. B. Hill, R.N., Southsea; Dr. R. W. Harper, Belfast; Dr. E. S. Haddad, Nahud; Captain T. Houston, R.A.M.C., France; Halifax Corporation, Medical Officer of Health to the; Dr. C. E. Harvey, Savanna-la-Mar; Dr. T. B. Hearder, Ilkley; Mr. J. W. Hayes, Greystone; Mr. D. A. Hastings, Liverpool; Dr. A. Hopkinson, Manchester; Mr. A. M. Hugo, Purley; Mr. H. Hedberg, Lond.

J.—Jamkhandi, India, Chief Medical Officer; J. L.; J. D. P.; Mrs. Jones, Petersfield; Mr. G. W. Jones, Wrexham.

K.—Dr. R. Kharegat, San Stefano; Dr. G. S. Keeling, Attleborough; Miss G. Keith, Lond.; King's College Hospital Medical School, Lond., Secretary of.

L.—Mr T. S. Logan, Stone; Dr. F. Lecalvé, Lorient; Mr. D. Ligat, Hastings; Messrs. E. and S. Livingstone, Edinburgh; Mr. A. Lawson, Lond.; Professor Letts, Belfast; Leicester Corporation, Clerk to the; Dr. H. C. Lane, Aberdeen, U.S.A.; London Missionary Society, Secretary of; Lamson Publicity Service, Lond.; Messrs. Lee and Nightingale, Liverpool; London Association of Nurses, Secretary of.

M.—Dr. H. A. Moody, Lond.; Dr. M. Malony, San Francisco; Mysore Government, Bangalore, Comptroller to the; Dr. A. C. N. McHatti, Udi, W. Africa; Dr. R. C. B. Maunsell, Dublin; Dr. C. W. P. Moffatt, Bolton; Dr. R. Martin, Banbridge; Dr. J. McCarthy, St. George's; Staff-Surgeon St. John Murphy, Lond.; Dr. N. Mahfouz, Faggala; Lieutenant A. Mathieson, Winchester; Captain J. C. Muir, R.A.M.C., Malta; Colonel T. F. MacNeece, A.M.S., Norwich; Mr. A. R. MacGregor, Bath; Mendip Hills Sanatorium, Wells; Mr. W. E. Mayne, Belfast; Dr. J. MacLaughlin, Bangor, Ireland; Medical Correspondence College, Lond.; Messrs. J. Menzies and Co., Edinburgh; Sir G. H. Makins, K.C.M.G., Lond.

N.—National Union of Women's Suffrage Societies, Lond.; *Northern Whig*, Belfast, Manager of; Nottingham Guardians, Clerk to the.

O.—Mr. T. T. O'Farrell, Dublin.

P.—Dr. F. S. Palmer, Lond.; Perth Royal Infirmary, Secretary of; Dr. A. C. Panchalingam, Colombo; Messrs. Parke, Davis, and Co. Lond.; Dr. J. J. Pringle, Lond.; Price's Patent Candle Co., Lond.; Dr. Joseph Prendiville, Glenbeigh.

Q.—Mr. T. Querney, Port St. John.

R.—Dr. E. D. Rowland, I.S.O., Georgetown; Lieutenant W. R. Reith, R.A.M.C., Portland; Royal National Hospital for Consumption for Ireland, Dublin, Secretary of; Dr. C. Reid, Stafford; Dr. M. Reid, Worcester; Dr. J. M. Renton, Boscombe; Rhondda Urban District Council, Pentre, Clerk to the; Lieutenant G. Riddock, R.A.M.C., Lond.; Mr. C. K. Rudge, Lond.; R. W. C.

S.—Dr. W. S. Syme, Glasgow; Mr. G. E. Smith, Birmingham; Captain H. Smith, R.A.M.C., France; Dr. W. Stewart, Southampton; Professor St. Clair Symmers, Belfast; Mrs. M. Style, Moreton-in-Marsh; Messrs. W. H. Smith and Son, Lond.; Dr. Walter Scott, Dublin; Messrs. Swets and Zeltlinger, Amsterdam; Mr. B. Seeber, Florence; Dr. Stupnicki, Burgdorf; Dr. F. F. Schacht, Lond.; Sunderland Post Co., Manager of; Dr. A. Savill, Lond.; Messrs. Saward, Baker, and Co., Lond.; Smith's Advertising Agency, Lond.

T.—Dr. B. N. Tebbs, Southampton; Dr. J. E. Thompson, Galveston; Messrs. W. Thacker and Co., Lond.; Dr. J. D. Thyne, Lond.; Mr. D. P. Thompson, Lond.; Dr. D. D. Tindall, Lond.; Dr. J. B. Tighe, Newcastle-on-Tyne.

V.—Valor Co., Lond.; Messrs. J. W. Vickers and Co., Lond.; Dr. A. Vost, Stirling.

W.—Dr. A. T. Waterhouse, Oxford; Mr. A. Wilson, Lond.; W. M.; Mr. E. Wood, Gorleston; W. B.; Welsh Metropolitan War Hospital, Cardiff; Dr. N. Wood, Lond.; Messrs. A. J. Wilson and Co., Lond.; Dr. A. C. Wilson, Formby; Welsh Calvinistic Methodists Foreign Missions, Liverpool; Mr. Sinclair White, Sheffield; Dr. W. Y. Woodburn, Southsea; Dr. H. B. Williams, Lond.; Mrs. Wells, Welwyn.